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**Overcoming the digital divide?
Africa and the information society
with special reference to Lesotho**

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ABSTRACT

This thesis investigates whether the Internet is reducing or eliminating poverty and whether the Internet is the provider of fast-based information for development. It explores the concept of the information society, the information revolution, and the Internet, to provide a framework for understanding the information society in Africa, and in particular, Lesotho. Increasingly the information revolution, the Internet, is said to be shaping our lives. Globalisation and the new economy are driven by the Internet and social and economic development results from the Internet.

The Internet, it is suggested, will enable Africa to "leapfrog" stages of economic and social development. The examples held up to Africa as models of the use of information and communications technology are the East Asian "Tigers", India's cybertowers and Silicon Valley in California, the United States. These are examined in detail. The question of inclusion and exclusion in the information society is explored and whether the Internet is creating another divide - the digital divide. A historical sequence of meetings, conferences and events that have attempted to include Africa in the information society is outlined. Statistics of telecommunication and Internet provision in Africa are included. These statistics show that the lack of telecommunications that is the method of accessing the Internet results in the lack of Internet provision in Africa contributing to the growing digital divide. The detailed case study of Lesotho situated in its historical, economic and social context, investigates the extent of telecommunication and Internet development in Lesotho.

The conclusions presented are that while the Internet can contribute to some social and economic development it is not reducing or eliminating poverty. This is shown in the case study of Lesotho. This thesis presents evidence of a growing digital divide in society between the information haves and have-nots. Because of the critical role of the Internet in the new economy and globalisation, without the Internet there will be fewer possibilities for social and economic development. Therefore the digital divide is an additional factor contributing to poverty and inequality resulting in greater exclusion for whole groups, countries, and virtually the whole of Africa.

TABLE OF CONTENTS

	Page
Acknowledgements	i
Abstract	ii
Table of contents	iii
Acronyms and abbreviations	v
 Chapter 1 Introduction	 1
 Chapter 2 Methodology	 5
1.1. Methods	7
 Chapter 3 The information society	 14
1 Idea of an information society	14
1.1 Information revolution	16
1.2 Internet	17
1.3 Inclusion or exclusion	20
2 So-called new economy	23
2.1 Leapfrog stages of development	26
2.2 "Success" of the new economy	29
3 "Knowledge-intensive industries"	37
3.1 "Brain power"	40
3.2 Control of the market	43
4 Silicon Valley	47
5 20:80 society	49
6 Digital divide	52
6 Recognition of the digital divide	55
7 Conclusion	58
 Chapter 4 Wiring Africa	 62
1 Meetings and events	64
1.1 Bangemann Report	64
1.2 G7 Ministerial Conference on the Information Society	66
1.3 African Regional Symposium on Telematics for Development	69
1.4 Thirtieth and Thirty-First ECA Conference of Ministers	73
1.5 Information Society and Development (ISAD) Conference	75
1.6 African Information Society Initiative (AISII)	81
1.7 Building the African information society with public and private cooperation	85
1.8 Global Knowledge 97 (GK97)	87
1.9 Africa Telecom '98	88
1.10 Global Connectivity for Africa Conference	92
1.11 African Connection Rally	94
1.12 Committee on Development Information (CODI)	99
1.13 African Development Forum '99	100

1.14	Southern African Development Community (SADC)	101
1.15	2000: the digital divide	101
2	Conclusion	106
Chapter 5 Telecommunications and the Internet -- getting connected		108
1	Telecommunications	108
1.1	Teledensity	110
1.2	Privatisation, liberalisation and deregulation	118
1.3	Universal service and access	120
2	The Internet	125
2.1	The Internet is "grotesquely uneven"	128
2.2	Internet users	135
3	Conclusion	139
Chapter 6 The shepherd and the Internet: case study of Lesotho		141
1	The economy of Lesotho	142
1.1	Conquest and migrant labour	142
1.2	One of the world's poorest countries	146
2	Telecommunications	152
2.1	"Very inadequate" telecommunications	152
2.2	Vodacom Lesotho (VCL)	166
2.3	Universal service and access	169
3	The Internet	175
3.1	From "illegality" to legality	175
3.2	The "advent of the Internet"	177
3.2	Included or excluded - the digital divide	184
3.3	"Enhance knowledge, information exchange, and communications"	188
3.4	"People are technology hungry"	193
4	Conclusion	199
Chapter 7 Conclusion		202
Appendix		213
References		215

ACRONYMS AND ABBREVIATIONS

^c	
AAC	Administrative Committee on Coordination (UN)
ACTA	African Continent Telematics Association
ADF	African Development Forum
AFRALTI	African Advanced Level Telecommunications Institute
AIF	African Internet Forum
AISI	African Information Society Initiative
ANI	African Networking Initiative
ARPA	Advanced Research Projects Agency
AusAID	Australian Aid
BAAP	Buenos Aires Action Plan
CABECA	Capacity Building for Electronic Communication in Africa
CDMA	Code Division Multiple Access
CERN	Centre Européen pour la Recherche Nucléaire
CEO	Chief Executive Officer
CIDA	Canadian International Development Agency
CODI	Committee on Development Information
COSATU	Congress of South African Trade Unions
CSIR	Council for Scientific and Industrial Research
CSU	Computer Services Unit (NUL)
DOT Force	Digital Opportunities Task Force
ECA	Economic Commission for Africa
EIU	Economist Intelligence Unit
ERPM	East Rand Proprietary Mines
EU	European Union
FDI	Foreign Direct Investment
G7	Group of 7 most industrialised countries
G8	Group of 8 countries (G7 plus Russia)
G15	Group of 17 developing countries
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GII	Global Information Infrastructure
GIIC	Global Information Infrastructure Commission
GK97	Global Knowledge 97
GKP	Global Knowledge Partnership
GMPCS	Global Mobile Personal Communications by Satellite
GPRS	Global Packet Radio Service
GSM	Global System for Mobile Communication
HDI	Human Development Index
HITD	Harnessing Information Technology for Development
HTTP	HyperText Transfer Protocol
ICT	Information and Communication Technology
IDRC	International Development Research Centre (Canada)

IEM	Institute of Extra Mural Studies (NUL)
IIT	Indian Institutes of Technology
IMF	International Monetary Fund
ISAD	Information Society and Development
ISP	Internet Service Provider
IT	Information Technology
ITU	International Telecommunications Union
ITU/BDT	International Telecommunications Union/ Telecommunications Development Bureau
kb	kilobyte
km	kilometre
LDC	Least Developed Country
LEC	Lesotho Electricity Corporation
LEO	Low Earth Orbit
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
LK97	Local Knowledge 97
LNDC	Lesotho National Development Corporation
LOE	Lesotho Office Equipment
LTC	Lesotho Telecommunications Corporation
LTRA	Lesotho Telecommunications Regulatory Authority
MAI	Multilateral Agreement on Investment
Mb	Megabyte
MILnet	Military Network (US)
MIT	Massachusetts Institute of Technology
NAFTA	North Atlantic Free Trade Agreement
NGO	Non-governmental organisations
NICI	National Information and Communication Infrastructure
NII	National Information Infrastructure
NIP	National Information Policies
NITF	National Information and Technology Forum
NSFnet	National Science Foundation Network (NSFnet)
NUL	National University of Lesotho
OAU	Organisation of African Unity
OECD	Organisation for Economic Cooperation and Development
PADIS	Pan-African Development Information System
PATU	Pan-African Telecommunications Union
PICTA	Partnership for Information and Communication Technologies in Africa
RASCOM	Regional African Satellite Communication System
RINAF	Regional Informatics Network for Africa
SACU	Southern African Customs Union
SADC	Southern African Development Community
SANGONET	South African non-governmental network
SATCC	Southern African Transport and Communications Commission
SDNP	Sustainable Development Networking Programme
SME	Small, medium enterprise
SMME	Small, medium and micro-enterprise

SMS	Short Message Service
TCP/IP	Transmission Control Protocol/Internet Protocol
TEMIC	Telecommunications Executive Management Institute of Canada
TRIPS	Trade-related Aspects of Intellectual Property Rights
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
USTPO	United States Patent and Trademark Office
VCL	Vodacom Lesotho
VSAT	Very Small Aperture Terminal
WAP	Wireless Application Protocol
WEF	World Economic Forum
WHO	World Health Organisation
WLL	Wireless Local Loop
WTO	World Trade Organisation
WWW	World Wide Web (or Web)

"The wonder of the Internet and its promise of a world without borders, of a global citizenry empowered, enriched and interconnected, also brings with it the hope of a world that is more compassionate, more caring and more committed to eradicating poverty and suffering everywhere" (Mandela 1999).

"In an ideal world, information technology holds enormous potential for development... However, with technological advances and globalization come unprecedented risks - that poor people and entire societies will be excluded from global economic growth" (World Bank 1999).

CHAPTER 1

Introduction

The aim of the thesis is to investigate the questions whether the Internet is reducing or eliminating poverty and whether the Internet is the provider of fast-based information, such as health, education or agricultural, to eliminate poverty and for social and economic development.

I will begin by describing my interest in the subject of the digital divide and the information society in Africa. In the 1990s many theorists argued that globalisation and information technology has created a new kind of society, the information society. Linked to this is the assumption that the information society will bring benefits, such as, health, education, employment and a better standard of living. Living in South Africa and experiencing the impoverishment of the townships, I was sceptical of the impact the information society had made. My honours research essay, Wiring Africa: Africa and the Information Society, investigated the impact of the information society in Africa. It also encouraged me to explore the subject more broadly and in greater depth.

In addition, in June 1998 I visited Lesotho with the aim of finding out about the development of the information society in a typical African country. The questions uppermost in my mind were whether the information society would contribute to the reduction or eradication of poverty, and whether the Internet was the provider of fast-based information for development.

Despite my scepticism, I had expected to be able to report on the positive effect of the Internet. Instead, I found to my surprise from my first interview with an international aid organisation, which had the objective to build the Internet in Lesotho, that not only was this organisation using out-of-date software but that they were not providing any Internet access for the majority of people in Lesotho. Instead the Internet was used to communicate with the head office in New York. Moreover, despite what the Economic Intelligence Unit (EIU) reported about the subject, that “the telephone network has been extensively modernised and expanded in recent years, with connections growing on average by 13 percent” (EIU 1998:59), I discovered that telecommunications in Lesotho were in a very poor state.

Lesotho was chosen for the case study because it is a typical African impoverished country. It stands at 134 out of 174 countries in the human development index with the majority of African countries on a lower index. From the 13 Southern African Development Community countries there are six countries above and six below Lesotho on the human development index (UNDP 1998a). This suggests that Lesotho is an average country in Africa that could be useful to study and the research used in comparative studies with other small poor African countries.

However Lesotho is also completely surrounded by South Africa that is the wealthiest country in Africa and the country with the highest Internet connectivity in Africa. From this there could also be expectations that it would be the most obvious country to benefit from its proximity to South Africa which could assist in Internet provision. In contrast to being a

benefactor, South Africa's imperialist role was evident when in September 1998 South Africa invaded Lesotho destroying much of Maseru. In June 1999, six months later, when I visited Lesotho again much of Maseru was still war damaged and queues of unemployed lined the streets – even in front of the local Internet café! As the case study of Lesotho shows South Africa continues to exploit Lesotho economically and has not played any progressive role in the provision of telecommunications or the Internet. Lesotho is also similar to the majority of other African countries that suffered from colonialism and imperialism, continuing poverty and high unemployment, and wars or disasters. The continued dependency on South Africa and geographical position within South Africa's borders makes Lesotho an unusual case study. Although Lesotho is an independent country, because of its dependency on South Africa, it could be regarded as a case study for the development of the Internet in the rural areas in South Africa. These factors make the development of the Internet in Lesotho an interesting study and both lessons and comparisons (contrasts and similarities) can be drawn from this history for further research.

Conventionally it is said that the Internet brings and accelerates social and economic development. According to Mark Malloch Brown, head of the United Nations Development Programme (UNDP), the Internet is the solution to global poverty providing developing countries with a “transformative opportunity” for poor farmers to get better crop prices and for improved education (Webber 2000). It is said that the Internet is driving globalisation and the new economy. Africa is being urged to participate in globalisation and the examples of the “booming” East Asian Tigers and the United States economy are held up (Lynn 2000b; Vasuki 1998). In 1998 there was the call for the African Renaissance which is dependent on

telecommunications and the Internet (Mbeki 1998). At the same time 1998 was the year in which globalisation was being questioned by financier George Soros and global leaders at the World Economic Forum at Davos as a “casino economy” of unbridled capitalism bringing instability, poverty, unemployment and social exclusion of developing countries (Elliot 1998b).

Was it really possible that the provision of the Internet could solve the world's problems of development when "the world is entering the twenty-first century with the largest divergence ever recorded between rich and poor" according to the International Monetary Fund (IMF 1999:32b)? Could the Internet develop Africa where more than half the population lives in poverty, in Niger 92 percent of the population live in poverty and Zimbabwe 80 percent, and the current average income in Africa is lower than in 1970 (Madavo 2000; Ravaged 2000)?

The objective of this thesis is to explore whether the assumption that the information society will bring social and economic benefits is correct and whether the Internet is reducing or alleviating poverty and providing information for social and economic development. It investigates whether there is even greater exclusion of Africa from “global society”. It examines whether there is a growing digital gap, the “digital divide”, as a result of the Internet, between the information haves and have-nots in the developed countries, and between the developed and developing countries such as those in Africa. The case study of Lesotho is used to explore the question whether the Internet in Lesotho is providing information to reduce or eliminate poverty and for social and economic development. In the next chapter the methodology used in this thesis will be discussed.

CHAPTER 2

Methodology

The methodology chosen as most appropriate for this thesis is a qualitative research method interpretative approach. In explaining the choice of qualitative methodology the focus will be on those aspects applicable to the thesis. In qualitative research there is “no standard approach” (Silverman 1995:23). However a general definition offered is that qualitative research is “multimethod in focus, involving an interpretive, naturalistic approach to its subject matter” (Denzin & Lincoln 1998:3).

An interpretative framework of critical theory is used. Therefore social, political, cultural, economic circumstances, the “historical situatedness” of the inquiry must be taken into account (Guba & Lincoln 1998:213). This may lead to providing insights of the situation and even to action to transform the situation (Guba & Lincoln 1998:213). Throughout the thesis a clear critical position is taken on neo-liberal capitalism and globalisation which is in accord with this framework. Similarly privatisation, liberalisation and deregulation of telecommunications are criticised. These criticisms from the perspective of the increasing poverty and unemployment world wide are perhaps based on the values of the “underdog”, such as altruism and empowerment, but are critical and shape outcomes of the question of growing social exclusion which is investigated (Guba & Lincoln 1998:214). The research does not claim to be neutral because injustices in society are confronted. Therefore the research is usually overtly political and does not attempt to conceal this because there is a clear

recognition that ideologies are evident throughout society (Kincheloe & McLaren 1998:265).

The relationship between research and political ideologies is explored below.

Although left, Marxist and socialist positions are part of research discourses they have been set back by the collapse of the former Soviet Union and “fashionably trashed” (Kincheloe & McLaren 1998:266). At the University of Cape Town TB Davie Lecture Noam Chomsky said that “the discourse of the privileged is marked by confidence and triumphalism: the way forward is known, and there is no other”, i.e. only intensified capitalism (Chomsky 1997:2). He continues that globalisation is using the model of the third world of “enormous wealth and privilege alongside of an increase in ‘the proportion of those who will labor under all the hardships of life’” (Chomsky 1997:2). With the installation of capitalism in the former Soviet Union, capitalist propaganda has pushed the position that there is no alternative to capitalism because “Marxism” or statism, i.e. bureaucratic state control, failed in the Soviet Union. Despite the power of capitalism’s spokespersons it does not reduce the value of these left, Marxist and socialist positions simply because of a “loss of favor” (Kincheloe & McLaren 1998:266).

In sum, critical theory and research attempts to use research as a form of social criticism based on the following beliefs: power relations underlie society and history, facts are not neutral but are part of values or ideology, capitalist production informs social relations, and that there are privileged and oppressed groups (Kincheloe & McLaren 1998:263). A partisan position is taken with the belief that the research is a first step to removing an injustice (Kincheloe & McLaren 1998:264).

The research undertaken is an investigation exploring the questions whether the Internet will help alleviate poverty and whether it will provide information to eliminate poverty in Africa, with a case study of Lesotho. To understand the significance of the Internet in the information society the concept of the “information society” is explored in-depth in relation to the “new economy” and globalisation. There has been no attempt to provide a glossary of a definition of terms because an elaborate conceptual framework is developed through Chapters 3 and 4 of such terms as “information society” or “digital divide”.

1.1 Methods

Many methods or techniques are used and combined for data collection such as fieldwork, interviews, observation, analysing texts, documents, statistics, visual (e.g. cartoons, pictures, photos, maps and figures), and recording and transcribing to provide an in-depth understanding (Patton 1990:10; Silverman 1995:8).

Key concepts are extensively elaborated through chapters of the thesis. A literature review is done throughout the thesis. The topic itself determined that I had to rely mainly on documents from the Internet and newspaper reports. The paucity of other research literature has meant in certain cases drawing on experts, such as Mike Jensen on the Internet.

In qualitative methodology a multi-method focus, or “triangulation”, is an alternative strategy to validation (found in quantitative research) providing a “complex, dense, reflexive, collagelike creation that represents the researcher’s images, understandings, and

interpretations of the world or phenomenon under analysis” (Denzin & Lincoln 1998:4). In qualitative research “rich descriptions” are considered valuable (Denzin & Lincoln 1998:11). Therefore a small number of people, documents or texts and case studies are studied in depth and detail using a variety of methods resulting in a deeper understanding of the question investigated (Patton 1990:14; Silverman 1995:9-10).

Textual analysis and quotes and excerpts are used throughout the thesis and interpreting records is considered as important as other methods, such as, observations (Patton 1990:60). In Chapter 3 this method of textual analysis is used to develop a framework for the thesis of what the information society is and to investigate whether it has brought inclusion or exclusion of whole continents and communities. It provides a background for the following chapters. Writing about the information society, Manuel Castells is possibly the most significant author on social exclusion and the information divide and in July 2000 he visited South Africa discussing his ideas¹. The thesis agrees with his position on social exclusion. Castells did not write any papers specifically for his visit to South Africa and the papers made available by Centre for Higher Education Transformation (CHET), who hosted his visit, on the CHET website are from 1999 or earlier (Muller 2000).

Comparative material was used on developing countries and developed countries, on the "Silicon Valleys" in the East Asian countries, India and in California, United States. Much of this required relatively recent information found only in newspaper articles or on the Internet

¹ His work has been described by the Wall Street Journal “Adam Smith explained how capitalism worked and Karl Marx explained why it didn’t. Now the social and economic relations of the information age have been captured by Manuel Castells” (Ensor 2000).

although some secondary sources, such as Henderson, were used. The sections on the new economy and the digital divide which is basically about the United States also relies heavily on newspaper and Internet articles. The use of cartoons illustrates satirically or humorously particular perspectives (Silverman 1995:60). In Chapter 3 are cartoons illustrating the “information superhighway” and globalisation, and in Chapter 4 globalisation and Africa, and the Internet and telecommunications in Africa.

In Chapter 4 using official conference documents and reports, as well as other articles and newspaper reports, letter and advertisement, a chronology of meetings and events is given to place Africa in the context of efforts to include it in the information society by mainly international agencies. Summaries are given of positions taken at the meetings or resulting from these meetings as well as direct quotes to provide a rich tapestry of detail. Without the Internet much of this material would not have been accessible and at least in this instance the Internet was a provider of information although not usually at a fast pace! One of the problems with Internet resources is that even from the Web sites of leading international agencies the Web address changes or disappears.

In Chapter 5, texts, maps, figures, tables and statistics are used for qualitative purposes. These methods are used to provide varying data for “triangulation” to investigate the lack of provision of telecommunications or the Internet in Africa (Denzin & Lincoln 1998:4). These statistics were not readily available because of the “marginalisation” of Africa and the lack of reliable statistics. Discovering them was far more difficult than a question of typing in a search word and getting immediate answers! They had to be unearthed from a wealth of other

information. Again the Internet and newspaper articles were the main sources as well as official documents from a few international agencies.

Chapter 6 is a case study of Lesotho. Qualitative methodology is naturalistic because the phenomenon or case study is studied in context in its natural setting and holistically (Patton 1990:40). Lesotho is placed in its historical, political, economic and social context. Fieldwork was undertaken in visits to Lesotho to make observations and undertake interviews. In qualitative methodology a single case study is acceptable because the issue is depth of study (Patton 1990:165). Cases that are particularly rich in information are deviant or extreme cases (and Lesotho appears to be such a case) because they are unusual or exceptional. The advantage of extreme cases is that usually they are interesting and one can learn a lot from them. They are also valuable for “illuminating the ordinary” representative cases (Patton 1990:170-171).

Lesotho is a typical impoverished African country with high unemployment and a legacy of the impact of conquest. However it could be considered unusual because it is a very poor country completely surrounded by South Africa a rich country in Africa as can be clearly seen in the map provided in the chapter. The case study investigated whether this proximity has provided any benefits to Lesotho enabling the development of the Internet. It is also a deviant or extreme case because of the extreme difficulties, the “illegality” of Internet provision in Lesotho. Although in other African countries because of bureaucratic ineptness and the fear of the loss of telecommunications revenue, governments may play a similar role in effect stifling telecommunications and Internet development (ECA 1998).

The chapter begins by describing the context of the impoverishment of Lesotho – historically, economically and socially. Texts were analysed mainly from Economic Intelligence Unit journals, World Bank documents and Lesotho government documents. The chapter though is primarily concerned with investigating the state of telecommunications and of the Internet in Lesotho, and is based mainly on interviews. Observations were also made and the photographs are valuable for recalling and capturing the setting (Patton 1990:247).

This case study was conducted over two years with visits to Lesotho in June 1998 and June 1999 to observe and analyse at first hand the questions being investigated (Silverman 1995:24). Each visit lasted five days and divided between visiting sites, making observations and conducting interviews for three days.

This “information-rich” case study used a small bounded sample that was purposefully selected to provide as much information about the central questions studied: whether the Internet is reducing or eliminating poverty and the provider of fast-based information for development in Lesotho (Patton 1990:169). Therefore the key sectors to investigate were the telecommunications and Internet service providers. The number of interviewees was unable to be increased because of the boundedness of the case study which was based on the choice of key informants who were particularly knowledgeable as sources of information and insights (Goetz & LeCompte 1984:85). In the course of this fieldwork 15 interviews were conducted with the experts and key informants in telecommunications and Internet service provision and international development agencies in Lesotho to understand the world from their perspective

as a “rich source of data” (Silverman 1995:114).

E-mails were used as a means for contacting potential interviewees and setting up interviews and to follow up certain issues after the fieldwork ended. Attempts were made to re-interview certain key informants in 1999 to do follow-up interviews. However many people were not available. In 1998, nine interviews were held – eight in Maseru (including one follow-up interview to clarify information) and one in Roma with two people. In 1999, six interviews were conducted – five in Maseru (including one follow-up interview to confirm information) and one in Roma with three people. All the interviews were generally unstructured except that certain questions were asked of all interviewees, for example, whether the Internet is widening the gap or closing the gap between the information haves and have-nots, who uses the Internet, is it providing information for development to eliminate poverty, what are the benefits of the Internet, and what are the future possibilities of the Internet?

The obvious benefit of a looser interview structure and not a rigid questionnaire is that it gives the interviewee's unique world view, telling their own story and emphasising what s/he considers important without being constrained or led by the interviewer. A flexible sequence of questioning was used, and the interviewees were able to raise their concerns, questions and comments (Silverman 1995:95). By combining a general interview guide (see Appendix) with an informal conversational interview unique insights were revealed. This occurred in all the interviews which was possible only by establishing an empathetic relationship and therefore an understanding and an interpretation of the “feelings, perceptions, experiences, and insights as

part of the data” (Patton 1990:58). In the interview my aim was to enter the interviewee’s perspective and see through their eyes to understand their world (Patton 1990:279).

The obvious difficulty is that the interviews all took much longer than anticipated because there was so much to be said. Detailed notes were taken in all interviews including the only one tape-recorded because the interviewees were less inhibited in the absence of a tape recorder that can be intrusive (Patton 1990:247). The advantage of non-taped interviews was that there seemed to be a genuine openness but the disadvantage was that there might not be complete accuracy although every attempt was made to ensure this. With the help of a lap-top computer in the evenings all the notes were typed up to ensure as accurate a record while the interview was still fresh and the interviewees still available.

In qualitative methodology rather than “reliability” an “authentic” understanding of the interviewee’s point of view by the use of open-ended questions was achieved in the case study of Lesotho (Denzin & Lincoln 1998:10; Silverman 1995:9-10). The validity of field research was established by using different data collection methods as has been done in this chapter, for example, maps, document analysis, observation, photographs, e-mails and interviews have been used (Silverman 1995:157). However a limitation of the thesis may be that only one case study was only used in it and a bounded sample.

In the next chapter the question whether the information society will even out or eliminate poverty is investigated.

CHAPTER 3

The information society

The end of the twentieth century could be characterised as the information society¹. What this chapter is concerned with is whether the information society will contribute to the reduction, or eradication of, poverty in society.

This chapter explores the idea of an information society to provide a framework for understanding the information society in Africa and Lesotho in the following chapters. It also investigates whether an information society results in a growing digital divide and in increasing social exclusion.

1 Idea of an information society

The idea of an information society² today rests on the following premise/assumptions. First, the information society is based on the extremely rapid developments in information technology (IT) (computer and data technology) and telecommunications and communications technology, and the convergence of the two in information and communications technology (ICT)³. This is known as the information revolution⁴.

¹ It could also be characterised by globalisation but this will not be given a full treatment in this document.

² The term information society is not new. In the 1960s Daniel Bell equated an information society to a post-industrial society. In a post-industrial society, such as the United States, there was a shift from producing goods to producing services (Bell 1974:467). Even earlier Robert Lane, who influenced Bell, used the term "knowledgeable society" for the United States. A knowledgeable society for Lane was based on the influence of Western scientific and technological knowledge (not metaphysical or religious) on all aspects of society (Lane 1966:650, 651).

³ Differences between information technology and information and communications

Telecommunication and communications technology is central to global information networks, above all, the Internet, an international network of computers between which information is passed and shared. The convergence of computer and communications technology in the Internet makes it possible to store, rapidly process, manipulate, produce and transfer or communicate large quantities of data or information (text, image, sound) in real time anywhere, anytime to anyone. These technological developments have overcome barriers of time and distance and to a certain extent cost⁵ (OECD 1999a).

Second, it is said that in the information society, information has replaced capital, labour and land as the key to economic development and growth (OECD 1999a; Talero & Gaudette 1996:1). It is said that information and communications technology has transformed the processing and generation of information making it more productive. In turn, the continuous application of knowledge and information to information and communications technology, to update or innovate hardware and software, therefore constantly increases productivity, which is one of the characteristics of the information society. This makes the human input of ideas and information the key productive force (Castells 1996:32).

technology are from a personal e-mail from Arthur Goldstuck, an IT specialist (Goldstuck 2000).

⁴ The speed at which the information revolution has developed over little more than 20 years between the 1970s and 1990s can be compared with the length of time, over two centuries, that the industrial revolution took to develop and spread across the world (Castells 1996:33).

⁵ From Madagascar to Côte d'Ivoire a 40 page document by courier will cost \$75 and take five days, by fax \$45 and take 30 minutes, and by e-mail less than 20 cents and take 2 minutes. This example presumes that there are reliable telecommunications and electricity infrastructure, fast bandwidth in operation, and affordable telephone tariffs (UNDP 1999:58).

1.1 Information revolution

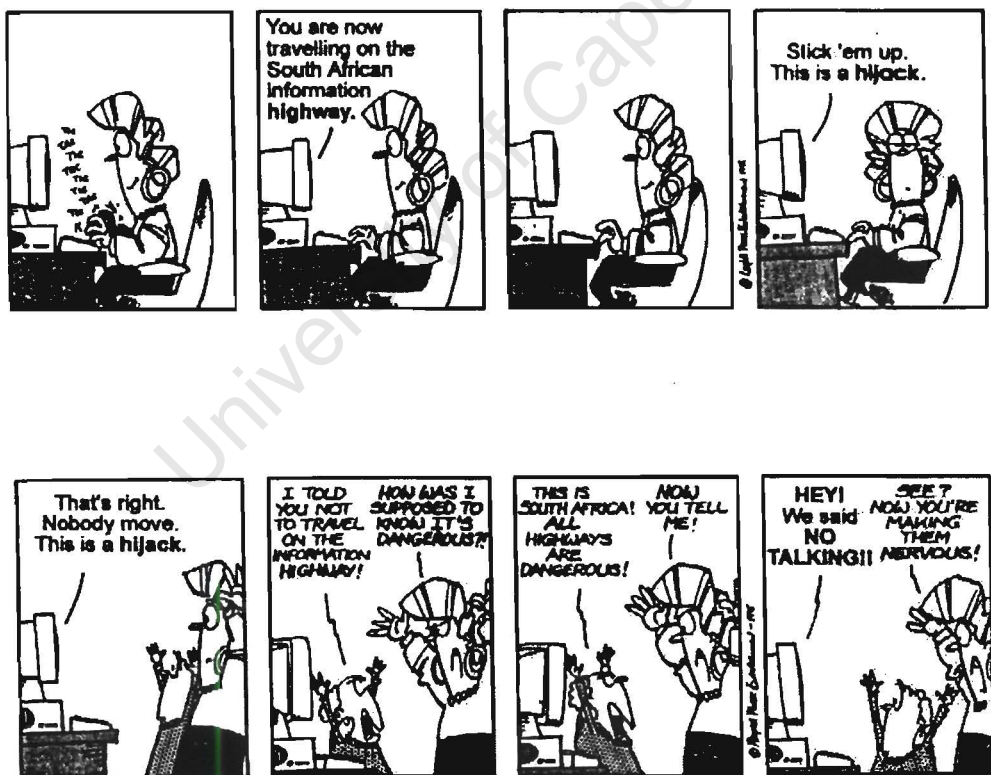
The pervasiveness of the information revolution throughout society is evident in the everyday use of information technology and information and communications technology. It is visible in the automation in factories, industries and workplaces, banking electronic services – automated teller machines (ATMs) and Internet banking, computerisation in education and health institutions, and the public services. Household gadgets, television sets, and transport are dependent on information technology. Information and communications technology “are at the core of human action” transforming the world economy, culture and the way we communicate (Castells 1996:2; Castells 1999a:1).

An example of the pervasion of ICT is the proliferation in the number of cellphones owned not only by the rich, but by a whole cross-section of the population. In 1999 cellular, or mobile, telephone growth in Africa was over 20 percent (Joubert 2000). South Africa is in the lead with an estimated 6 million users – more than the number of telephone landlines. Fashionwear retailers in South Africa have taken advantage of the fast growing cellphone business by targeting cellphones to both low and middle incomes. At Sales House in 1999 R850m was generated in cellphone sales which amounted to one-quarter of total sales and one-third of profits. At Jet stores in 1999 cellphone sales were over R200m. As a sign of status and wealth cellphones are more popular than clothes. But paying the monthly account draws in customers who see and might buy new clothing ranges (Joubert 2000)⁶.

⁶ A further indication is other retailers are also selling cellphones, such as Joshua Doores, Woolworths and Clicks.

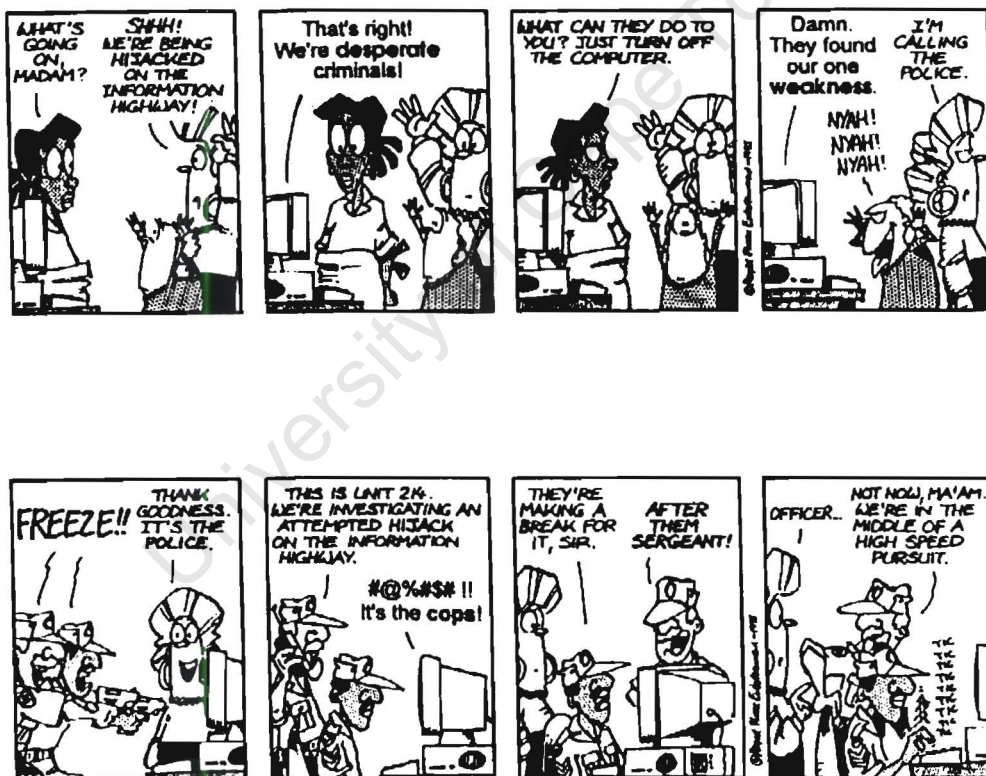
1.2 Internet

The exponential growth and the popularisation of the Internet (or Net) has moved it far away from its origins in the military and research institutions into households for entertainment, music, games and electronic mail (e-mail). In 1992 Al Gore called the Internet the "data superhighway" and claims to have popularised it as the "Information Superhighway" (Technology 2000; Warner 1993:199). Because highways in Africa are often potholed, dirt tracks, or there are dangers from hijackers, the term "Information Superhighway" was an easy subject for satire as shown in the topical Madam & Eve cartoons.



Source: Francis et al 1997:204

The Internet originated in the 1960s during the Cold War between the United States (US) and the former Soviet Union. It was part of a United States Department of Defence project called the Advanced Research Projects Agency (ARPA). The Internet was an experiment to develop a robust secure network architecture of computers which would survive a nuclear or Soviet attack. Data was transmitted by packet switching between different routes. If one computer or network was inoperable there would be no impact on the whole network and communications could continue. Each autonomous computer could continue to communicate



Source: Francis et al 1997:205

along any route of the radial web-like connections. Using Transmission Control Protocol/Internet Protocol (TCP/IP) different computers are able to communicate with each other. Although initially designed for the military in the 1980s ARPAnet was divided into the military network (MILnet) and the National Science Foundation network (NSFnet) supporting academic research and development. By the early 1990s, the majority of private, commercial or publicly funded networks joined the Internet through NSFnet. By the mid-1990s newspapers were writing about the Internet as the cutting edge of new technology and this date could be considered the origin of the Internet as it is now generally known (Cerf 1995; Kahn et al 1997: 131, 141, 149).

The World Wide Web (WWW or Web) was developed in 1989 at the Centre Européen pour la Recherche Nucléaire (CERN) laboratory in Geneva, Switzerland, to be an "interactive world of shared information" (Berners-Lee 1996). The Web provides access, using HyperText Transfer Protocol (HTTP), to the information stored on the Web. The Web is a network of documents linked to each other by hyperlinks. All Web documents begin their addresses with http and this addressing distinguishes the Web from other parts of the Internet (Cockburn 1996:83; Goldstuck 1999).

The Internet is used by over 150 million people worldwide and by 2001 is projected to grow to over 700 million users (UNDP 1999b). It is a vast multimedia global information resource consisting of over two billion unique web pages (NUA 2000). The Internet is now accessible from cellphones⁷ as well as computers. By 2003 the forecast is a billion cellphone subscribers or one in six of the world's total population (Shillingford 2000). It is possible that cellphones

⁷ Currently Wireless Application Protocol (WAP) is the technology that enables cellphones to access the Internet. Using short message service (SMS) cellphone users of ordinary

could become the technology to access the Internet. Europe is ahead of the United States as the leader in cellphone innovation (Laing 2000). There are obvious difficulties with cellphone access, for example, the tiny screen and this would limit cellphone Internet access to specific uses.

However in Japan cellular access to the Internet is preferred. One-quarter of Japan's population - 45 million households - are connected to the Internet. Nearly 68 percent of Japanese households had cellphones in 1999. With a combination of the Internet and cellphones the aim is to position Japan as the leader in the information society (Stevenson 2000). Over 17 months I-mode mobile Internet service signed up 10 million people (Nakamoto 2000). In Britain nearly half the population, 26 million people, have cellphones which could become the main access point to surf the Web (Lynn 2000b). However in Europe more people have more personal computers than in Japan therefore mobile Internet access might not prove to be as popular (Nakamoto 2000). In Africa where more cellphones are being bought than personal computers cellphones may be the choice for Internet access. Also cellphones are cheaper costing one-twentieth of a personal computer (Soon 2000).

1.3 Inclusion or exclusion

There are two opposing positions on the implications of the information society based on inclusion and exclusion.

The first position claims that the information society will bring benefits because the Internet

handsets may send short messages to each other (Shillingford 2000).

offers all countries opportunities for development and information-based economic growth which is the key to competitive success and profits in the information society. The Internet provides the competitive advantage through its fast transmission, processing, production and communication of large quantities of information and the provision of information in real time. Growth, productivity and profits are linked to telecommunications and the Internet. Countries are able to leapfrog stages of economic and technological development using the Internet thereby increasing their participation and competitiveness in a globalised economy (Castells 1996:2, 469; Webber 2000; Wolfensohn 2000).

This position holds that for Africa, the information society is linked to the African Renaissance. Advocates of the benefits of the information revolution, the Internet, say that it would make it possible for Africa to leapfrog stages of development and bring Africa into the “global village” (Mbeki 1995?)⁸.

The second position on the information society is that the information society excludes whole countries and communities. Worldwide there is increasing inequality, polarisation (increase in the percentage of wealth of the top 20 percent compared with the bottom 20 percent of the population), poverty including extreme misery, and the “social disenfranchising” of individuals, groups and even countries (Castells 1999:7). This is because the use of information and communication technologies in the context of globalisation and increasingly deregulated capitalism is linked to increasing poverty, job losses, permanent unemployment, lack of basic social welfare, insecurity, and the destruction of the environment (Castells 1996:34; Castells 1999a:7).

⁸ See also Economic Commission for Africa (ECA) 1996a, Ruggiero 1997, and the United Nations Development Programme (UNDP) 1996 about the necessity of the Internet for socio-

A decent standard of living and improvements in basic living conditions are now dependent on the Internet (Castells 1999:8). Lack of access to the Internet results in social, political, economic and educational exclusion (Clinton-Gore 2000). The Internet has spread extremely rapidly but its distribution is uneven globally, regionally and locally resulting in a “digital divide”⁹ bringing increased poverty and inequality. Millions of people are cut off from the Internet. Whole continents, countries and communities may either be included or excluded in the information society depending whether they are as “source of value” as consumers or producers (Castells 1998:4). Virtually the whole African continent is excluded in a “technological apartheid” (Castells 1998:2). During his visit to South Africa in June 2000 Manuel Castells warned that the exclusion of Africa will be worse in the new economy than in the colonial and post-colonial eras (Ensor 2000). He pointed out that Africa, including South Africa (which has some, but insufficient resources), lacks both human resources and an adequate information and communications technology infrastructure and therefore, Castells says, risks being “deleted” from the information society (Marais 2000).

While locally some communities and individuals have access to the Internet and are included, others without Internet access are excluded. The consequence is that there is a global “digital divide” between the knowledge “haves and have-nots, between knows and know-nots” in the information society (UNDP 1999:57).

Further the silicon valleys or high-technology (high-tech) centres where information and communications technology is produced remain separate and distinctly located. The Internet is

economic development in Africa.

⁹ The term “digital divide” comes from the reports of the United States National

enabling firms to be located in the suburbs out of the central business districts. Improvements in telecommunications infrastructure, for example, fast bandwidth are therefore felt in the silicon valleys or suburbs and not throughout society. This excludes many people both in the developed and developing countries from any Internet benefits of access to information and the information technology skills needed for employment (Castells 1996:34).

2 “New economy”

These two opposing positions on the information society are linked to the idea of the new economy and globalisation. It is said that the Internet is driving both the new economy and globalisation (Wolfensohn 2000).

The “new economy” is called a “new” economy because it is based on information and communications technology and on the centrality of information or knowledge. These new economy characteristics are the ones on which the information society is based (Castells 1998:6).

This shift to the new economy is said to be reflected in the Nasdaq Composite index, which is heavily weighted in information and communications technology stocks - technology, media and telecommunications (TMT) shares - unlike the Dow Jones Industrial Average. The new economy is composed of the new technology companies such as the software company Microsoft, the leading Internet bookseller Amazon.com, or the Internet portal company Yahoo!. These new economy companies are considered very profitable. But valuations of the companies and the profits made are not equivalent. Share prices for Microsoft are 60

times the annual earnings. Yahoo! and Amazon.com had not made a profit for their first three years but are considered very profitable in the new economy (Kaletsky 1998). Valuations of companies in the new economy depend on betting on whether the company might become valuable in the future through continued growth rather than on current profits. Speculators hope for the making of new profitable companies like Microsoft¹⁰ (Klein 2000).

A few individuals have benefited enormously in the new economy. But this wealth is volatile because it is paper-based. Take the example in the United States of high-technology companies that house six of the highest paid chief executive officers (CEOs). In 1999, Charles Wang (Computer Associates International) led with an annual total compensation package of \$650.1 million. In 1998 he was 39th showing a remarkable leap upwards. Similarly the volatility is evident in two new listings: Bobby Johnson Jr (Foundry Networks) who was compensated \$230.5 million and Stephen Case (America Online) \$117.1 million. However these positions are inherently unstable and could be shortlived as with Stephen Hilbert (Conseco) who was ranked 12th in 1999, but was forced to resign recently - although well compensated at \$75.1 million. A change from previous rankings shows the current dependency on speculative wealth for CEOs' packages. Only 23 percent of compensation was from salaries and bonuses compared with 60 percent in 1995. The rest was from stock price gains (Six 2000).

¹⁰ Yahoo! has a market capitalisation of \$93 billion but an annualised turnover of \$620 million and Amazon.com has a market capitalisation of \$21 billion and an annualised turnover of \$1.424 billion. Thawte the Cape Town based company was valued at R3.5 billion although the company has a turnover of only R25 million (Klein 2000).

The so-called new economy is called "informational capitalism" because, although still capitalist, the Internet enables fast networked application, and production of, knowledge or information (Castells 1999a:2). The problem with this term informational capitalism is that it suggests there is a fundamental change in capitalism in the new economy. Although called a new economy it is the same old capitalist economy driven by profits, private ownership of the means of production, and with production based on capitalist classes.



It is argued that a globalised economy emerged because of the information revolution driven by the Internet (Wolfensohn 2000). Fundamental economic activities are able to work globally together in real time because of the Internet. Globally integrated financial markets are connected in real time with billions of dollars moving in seconds across the globe. Investments

and savings worldwide are integrated because of the Internet. Capital markets are influenced by pressures in financial markets on the other side to the globe. Even countries not directly connected to these global financial markets come under pressure indirectly from them (Castells 1996:93; Greenspan 1998:243-245).

According to Alan Greenspan, Federal Reserve Board chairperson, the Internet has made it possible for the expansion of cross border flows of huge amounts of financial capital, because of the low costs¹¹ (Greenspan 1998:243). Daily over \$1.5 trillion is exchanged in the world's currency markets alone (UNDP 1999a). At the same time because of the Internet's speed and global reach inherent is the potential for rapid far-reaching casualties. The downside of the Internet is that colossal losses can be made at what was previously considered an impossible speed. This was evident in the 1997/1998 financial crisis in South East Asia, Japan, Brazil and Russia (Greenspan 1998:243, 247).

This financial collapse had devastating social consequences, such as in South Korea, where unemployment jumped from almost nothing to 3,65 million, thousands were made homeless, and the suicide rate amongst young women rose markedly (Marais 1999). The emerging markets' crash in South East Asia is now suggested to be a blip in the continuing "Asian miracle" which is upheld as an example for developing countries to emulate (Castells 1998:3; Rosy 2000).

2.1 Leapfrog stages of development

People claim that the South East Asian "miracle" countries were able to leapfrog stages of

¹¹ The cost of a 3 minute telephone call between New York and London dropped from \$245 in 1930 to 35 cents in 1998. Using the Internet vast quantities of information can be

development to become industrialised countries because of information and communications technology. This was made possible through the production of semiconductors¹² in South Korea, Singapore, Hong Kong and Taiwan. It was by seizing on the opportunity to cheaply produce semi-conductors through low wages that these countries developed and not by using the Internet (Henderson 1991:164).

Semiconductors are key in the new economy. The choice of these Asian countries for investment in semiconductors by foreign companies was because of the surplus of cheap and unemployed labour, tax incentives, repatriation of profits, laws controlling labour and the development of trade unions, availability of skilled technicians and engineers, and a reasonably well-educated and stable workforce. This stability was a result not only of state repression but also the use of certain state social benefits such as low cost housing, education and welfare programmes. Governments also ensured that domestic capital was reinvested and the countries were able to assimilate high technology industries with the development of an internal market (Henderson 1991:72).

But semiconductor industries are highly exploitative of labour whether in South East Asia or the United States. Mainly young women are employed as unskilled labour, working long hours with low pay. They are made redundant at an early age as a result of work related eye and muscle injuries. As jobs become less labour intensive with increasing automation, fewer jobs are offered leading to growing long-term unemployment (Henderson 1991:74).

rapidly transmitted for less than 35 cents in three minutes (UNDP 1999a).

¹² Semiconductors, or silicon chips, increase the speed and capacity of computers. In 1984 88 billion semiconductor units were produced and in 1997 260 billion semiconductor units. Market grew from \$20 billion in 1982 to over \$144 billion in 1999. North and South America produced one-third of chips worldwide totalling \$47 billion in 1999. Asia-Pacific (Singapore, South Korea, Taiwan and India) was second biggest at \$35 billion overtaking Europe at \$31

The "hope" for developing countries is to become low wage "silicon valleys" for the production of information and communications technology. But semiconductor plants are not cheap and cost between \$1-\$3 billion to build. Furthermore, high-technology companies bargain ruthlessly with countries competing to attract investment and development. Take the example of Intel, who demanded numerous concessions and conditions that only benefited the company profits before locating to New Mexico, where they received the generous subsidy of an \$8 billion industrial revenue bond (Smith 1999?).

Semiconductors cannot be produced by every country because this would result in over-production. The problems of over-production were shown as early as 1996. In 1996 the price of computer chips collapsed at the same time as the United States increased production which had ramifications in South East Asia. The consequence was a flood of chips onto the market with prices dropping from \$21 to \$1 which might be beneficial in lowering prices. But for workers it means lower wages, and higher unemployment under capitalism (Elliot 1998).

It is clear that the semiconductor industries, as shown in the South East Asian countries, have not led to rising living standards for the majority of workers. This is because they are based on cheap labour and low wages resulting in increased inequalities and polarisation in society (Henderson 1991:164).

Although skills and education are said to be essential for workers in the information society,

billion (Kroll 2000:157).

the semiconductor industry (central to the information society) has not led to acquiring skills even amongst the (predominantly male) technicians and engineers. This is because speed is key in innovation and it is therefore faster and more profitably to use technicians or engineers from other countries who are already skilled in the job required. As the competition for highly skilled workers increases, the advantages of selecting skilled labour, albeit at a higher cost, outweighs the advantages of cheap labour costs because the competitive edge and therefore profits are maintained (Gardner 2000; Henderson 1989:2, 75; Thurow 1996:73).

2.2 **“Success” of the new economy**

The United States is also used as the example of the “success” of the new economy especially for Europe. In the United States since the 1970s there has been continuous investment in information technology¹³. More importantly since the late 1980s and early 1990s businesses invested heavily in information and communications technology (Castells 1996:51). The long growth cycle in the United States is said to be a result of the Internet and is upheld as a model of success to the rest of the world (Baker 2000).

The United States has been experiencing the longest period of growth in its history (Jones 2000). In the United States unemployment is officially at a 30 year low at 4.1 percent. Productivity is said to be outpacing inflation that was 4 percent in 1999. However there are officially at least 8 million people, or 6 percent of the workforce, holding multiple jobs just to make ends meet, although the actual figure may be much higher. Average wages only increased 3.7 percent maintaining the cheap labour force (Dunne 2000). Meanwhile students at the Massachusetts Institute of Technology (MIT) became millionaires because they were

¹³ Microprocessors were first developed by Intel in the United States in 1971 (Henderson 1991:33).

paid in Internet shares for their summer jobs at start-up companies (Europe 1999)¹⁴.

This extended period of growth is held up to Europe and the developing countries as the reason for joining the information society because similar growth could then be experienced by these countries. It is said that if Europe is not to become a "US digital colony", i.e. a disadvantaged colonial country in the new digital economy, it needs to speed up further deregulation and privatisation of telecommunications and invest in the Internet to be competitive (Hill 2000; Lynn 2000a).

The new economy argument is that technology-driven productivity has allowed the United States economy to enjoy this long period of non-inflationary growth. It is based on structural productivity growth driven by information technology. Greenspan, Federal Reserve Board chairperson, claims that from 1995 output per hour has nearly doubled the average pace of the preceding 25 years (US economic 2000).

However, statistics for measuring this productivity are difficult to interpret because they are not consistent. The United States Department of Commerce figures in October 1999 seem to support the position that information and communication technology is very important in the economy. But this is because of changes in the department's method of calculation. The new method calculates spending on software as an investment and not as a business expense. This makes a substantial difference to economic growth figures for the 1990s when companies began heavily investing in software (Puncturing 1999).

¹⁴ In contrast to this private wealth there is a shortage of public funds for public services that are declining. Bridges and highways are not repaired. For the majority conditions are worsening, for example 40 million people have no health insurance. Over 45 million Americans use water containing potentially dangerous levels of toxic materials, pesticides and

The Organisation for Economic Cooperation and Development (OECD) estimates that "knowledge-based economies" account for over 55 percent of individual countries' total output. In the OECD study Germany leads at over 58 percent followed by the United States and closely by Japan at 53 percent and Britain at over 51 percent. Investment in innovation in services has risen faster than manufacturing in the United States. It rose from 4 percent in 1980 to nearly 20 percent in 1996 according to the OECD. But a major problem is that the OECD definition of the "knowledge economy" is extremely broad. It includes not only computers and telecommunications but cars, chemicals, health, education etc. which are not new economy companies¹⁵ (Knowledge 1999).

Even in narrower studies using only computers and telecommunications companies, the "digital economy", estimates range between 8 percent for 1999 to 35 percent of United States gross domestic product (GDP) since 1994. In contrast Goldman Sachs estimates that it is only 10 percent of GDP for the since 1994. This is because basic telecommunications and consumer electronics, televisions or radios, have been part of the (old) economy for a long time. Therefore the definition is still too broad. If they are excluded then the share of the information and communications sector is only 5 percent of GDP. Therefore this sector is

parasites (Elliot 1999).

¹⁵ Quantitative studies of "knowledge industries", using similar, and I think unacceptably, broad categories have been used to prove that there is an information or knowledge society based on the production of services. See Machlup (1987), Porat (1977), Parker (1987), Drucker (1992b, 1994). For South Africa as an information society see Boon (1992), Boon, Britz & de Lange (1993), Zaaiman (1985), Harmse, Boon & Britz (1996), Britz, Boon & de Lange (1993), De Lange, Boon & Britz (1993).

bigger than car manufacturing but smaller than either the health or the financial sector (Puncturing 1999).

Although the structural productivity argument is used to argue for Internet investment, a question is whether growth and the new economy is rather based on speculation in Internet shares. In the United States since 1995 there has been an equity bull market and this has contributed to the number of shares owned by ordinary households. Stock market gains have contributed to the consumer¹⁶ boom. According to Greenspan the "wealth effect" of the bull market has contributed about 1 percent a year to domestic demand growth since 1996. Household ownership of equities has risen from 50 percent of personal income in 1987 to 160 percent today. Over 50 percent of the US population own shares (Kaletsky 2000). However, gross inequalities still exist with half the shares on the United States stock market being owned by the top 1 percent of shareholders (Kuttner 1999).

Enormous wealth has come from the profits made from speculating on information and communication technology shares. High technology shares in the United States were worth \$2,700 billion in 1999, more than the value of all shares in the United Kingdom's equity market, the world's third largest market. Microsoft alone was worth more than all companies listed on the Italian stock exchange (Technology 1999).

This speculative wealth is very unstable indicated by the sharp rises and falls in prices of stocks. The "technological bubble" rose by 180 percent on the Nasdaq in 1999 (Gilbert 2000).

¹⁶ American consumers from the second quarter 1997 to the end of 1998 spent \$400 billion – more than twice the total annual income of sub-Saharan Africa (UNCTAD 1999a).

But in April 2000 shares dropped by the largest percentage yet, over 25 percent, even worse than the previous stock market crash in 1987 of 19 percent¹⁷. At the same time the Dow Jones dropped over 8 percent (De Ionno 2000). This volatility in the financial markets of Internet shares has been seen before. In 1998 the Goldman Sachs Index of United States Internet shares soared and had quadrupled by March 1999 and then fell by 50 percent (Europe 1999). Recent share falls could reflect a similar so-called market "correction" of speculative excesses. What is underlined is the volatility of Internet or new economy related shares. The centrality of the United States in the world economy means that globally the repercussions of a "burst bubble" would probably be severe financial, economic and social turbulence (Rosy 2000).

Although European Union (EU) leaders say they are concerned about using the American model, they also say they see no alternative. They recognise that the American economy is based on "casino capitalism" fed by speculation that is completely at variance with the real economy - the production of goods and services. "Casino capitalism" has increased the gap between the haves and the have-nots. In 1980 in the United States chief executive officers (CEOs) earned 42 times as much as the average worker. But in 1998 they were earning 410 times as much as the average worker (Karon 1999). The biggest shift in income growth in the United States is for the people in top management positions. In contrast, low wage part-time, casual and contract jobs have escalated with contingent work rather than job security being the norm. The real value of the present minimum wage is below that at the beginning of the 1960s (Kuttner 1999). The ordinary worker now has to do double or triple jobs. More women

¹⁷ Share values in Amazon.com dropped from \$35 billion to \$16.5 billion and some economists suggest this might be considered a beneficial correction as profits are only expected in December 2002 (Sinclair 2000).

are wage earners, not because of increased gender equality, but because of shortages in family incomes (Elliot 1999). There is minimal social welfare in the United States and the elimination of European social welfare benefits is said to be necessary for Europe to compete in the new economy. This is a real concern among European Union leaders who fear social unrest in Europe if benefits are further eroded (Europe looks 2000).

It is not because the model is American that there is social injustice and greater wage inequities. The problem is that the American politicians and many trade union leaders have gone along with big business on promoting the new economy and globalisation. Neo-liberal policies have been implemented intensively in the United States. These policies are for deregulation instead of state controls thereby weakening unions. Other policies include the liberalisation of trade, the privatisation of public enterprises and the cutting of state spending on social services and social development - on housing, education, welfare and health. These policies are spread globally by the World Bank, the International Monetary Fund (IMF) and the World Trade Organisation (WTO) who stand for unfettered capitalism and are the "new rules of globalisation" (Brenner 1998:235; Martin 1997:8; UNDP 1999:68).

Capitalist neo-liberal policies started in the 1970s and the 1980s. But it was at the end of the 1980s and early 1990s with the collapse of the Soviet Union and Eastern Europe and the replacement of Statism or Stalinist bureaucracy with capitalism that a full capitalist offensive took place under globalisation. The consequence has been "global pillage" and not a "global village" (Brecher 1996:182). Moreover, according to capitalist propaganda "there is no alternative" to capitalism. Concerning the huge capital flows, the role of the Internet and the devastation caused by global finance during 1997/1998, it is also said "there is no alternative"

and that developments in technology cannot be turned back (Greenspan 1998:247).

However it is not the case that "there is no alternative" to capitalism nor that this is either a natural process or an inevitable process which cannot be stopped. Each neo-liberal policy has been agreed to by governments, parliaments and business in support of unrestricted capitalism. And if governments are unable to take action and there is genuinely no alternative then globalisation poses a great threat to democracy (Martin 1997:8, 10). But the signs are there of opposition to globalisation and the struggle against capitalism from ordinary trade unionists, activists and youth who, who by using the Internet to organise took their demands onto the streets in the "Battle for Seattle" in December 1999 against the WTO¹⁸.

Globalisation is the intensification of capitalist competition globally as industries and businesses search out new markets for profits. Between 1970-1990 the manufacturing rate of profit, because of low cost and priced manufactured goods for the G-7 nations, was about 40 percent lower than between 1950-1970. One indicator used by economists to determine the extent of the new economy is that investment in information and communications technology has risen from 10 percent to 60 percent based on constant dollars. But taking the current dollar value, Goldman Sachs calculates it at 35 percent and not 60 percent (Puncturing 1999). The decline in profits in manufacturing has meant a decline in investment therefore an increase in unemployment and a drop in wages (Brenner 1998:242; Elliot 1998).

¹⁸ The Internet is being used to communicate and organise resistance by political, social and environmental movements. Activists involved in "The Battle of Seattle" against the World Trade Organisation (WTO) at the end of 1999 used e-mail extensively to organise the protest marches. Electronic participation by African countries depends very much on what Internet access exists in the country (Patel 2000).



Source: South African Labour Bulletin 22(6) 1998:75

Globalisation includes threats by capitalists to workers of the ability to move whole plants to a new location if wages and work conditions are not agreed. The result is a “race to the bottom” in which wages and social conditions drop to the level of the most desperate workers (Brecher 1996:182). This option, which gives greater flexibility to capitalists, is only possible because of the emergence of information and communications technology, chiefly the Internet (Greenspan 1998:245). It has enabled the decentralisation of businesses while the managerial control and wealth remains in the hands of a few developed countries (Henderson 1991:3). Globalisation does not mean that there is automatic decentralisation of wealth or greater opportunities for developing countries to create new technology companies but rather the exclusion of these countries. The United States alone is the financial home for 90 percent of the world's electronic technology companies (Kaletsky 1999a).

3 **"Knowledge-intensive industries"**

Information, or knowledge, is the backbone of the information society and these sectors are said to be the fastest growing in the economy (UNDP 1999:57).

The term "knowledge society" is also used because it is said that knowledge is applied to knowledge itself and is the essential rather than an additional resource - more important than labour, property or capital. Because knowledge is more important than capital and knowledge-based occupations do not form a social class, the argument continues, knowledge societies are "post-capitalist" societies. However this position is incorrect because society remains capitalist - based on classes - even in the so-called new economy (Drucker 1998:15; Stehr 1992a:132; Stehr & Ericson 1992:5). It is only by means of capital, fundamental in the economy, that the five top biotechnology firms, which are said to be examples of knowledge-intensive industries in the United States and Europe, are able to control 95 percent of gene transfer patents. It costs \$300 million to create a new commercial product. Knowledge, in other words, is dependent on capital and subordinate to it (UNDP 1999:68).

The idea that there is a new knowledge society because of the centrality of knowledge also seems erroneous. It is said that knowledge was applied in the past to things or processes and that certain ancient societies such as Egypt or Israel were called knowledge societies. But the basis of today's knowledge society differs (Stehr & Ericson 1992:6). It is said that today's society is a knowledge society because of the degree of penetration of Western scientific and technical knowledge throughout society (Lane 1966:651; Stehr 1994:9, 105). The problem with this definition of knowledge as only consisting of Western scientific knowledge is that it

excludes Eastern, African, indigenous knowledge and dismisses peasant societies¹⁹.

Even if indigenous knowledge is ignored by theorists of the information society, it is in fact a valuable source of knowledge that is recognised by the multinational drug companies and the World Bank. There are enormous profits to be made from the generally secretive exploration and resulting exploitation by bioprospectors, without indigenous people's or the government's consent (UNDP 1999:70)²⁰.

What are these "knowledge sectors" in the economy? There is a shift to the production of services rather than goods and therefore the economy is said to be "post-industrial". This is based on an extremely broad category of workers, basically anyone not in agriculture, mining, construction or manufacturing. Jobs are also relabelled to fit into the information or services sectors (Thurow 1996:71; Kumar 1995:27).

In the service industries there has been an increase, not a decrease, in the number of workers who are low paid, non-unionised, often casual or contract workers, employed in restaurants, fast-food outlets, the 'hospitality', tourist and entertainment industries where wages can be below 40-50 percent of wages in basic manufacturing. However simply using a computer or automated machinery does not necessarily give power to the worker. It is estimated that the

¹⁹ In India turmeric has been used for centuries to heal wounds but in 1995 two researchers at the University of Mississippi Medical Centre were granted a United States patent which could only be repealed by written evidence. An ancient Sanskrit text was produced but this would not always be possible particularly in oral cultures which allows for the continued theft, now of knowledge, from the developing world (UNDP 1999:71).

²⁰ In Madagascar the rosy periwinkle contains anticancer properties. This indigenous knowledge has been exploited by the United States multinational pharmaceutical company Eli Lilly which receives \$100 million in annual sales while the people of Madagascar receive a negligible amount (UNDP 1999:70).

spread of computer technology accounts for up to 50 percent increase in "demand" for more skilled workers. Further that information and communications technology skills are required in an estimated 60 percent of United States jobs (Autor 1997:i; Benton 1998; Callinicos 1992:124-125; Henderson 1991:5; Lyon 1995:62).

While the majority of jobs in the "knowledge industries" are in fact cheap labour low-end service jobs there are also information or knowledge professionals, experts and specialists, who are a highly paid minority, such as in financial or medical services (Bell 1974:18; Drucker 1992a:xv; Stehr 1992a:107).

Research and development is also found in the extremely profitable so-called "knowledge-intensive industries" of information and communications technology and biotechnology. Research and development is critical for innovation and to be competitive. But state funding of research and development (although essential in the initial development of the Internet in the United States) has dropped worldwide. It has been replaced by private funding and therefore private ownership of knowledge as capitalism pursues new markets for profits in the intangibles of knowledge or information. Even where state funding continues it is in the private sector that the profits are made. On average almost 60 percent of research and development is funded, and 70 percent carried out, by businesses (OECD 1999a). In the developing countries there has been a drop in government spending on research and development from 6 percent in the mid-1980s to 4 percent in the mid-1990s. The indisputable concentration of research and development in the developed countries is shown by the fact that in 1993 only 10 countries accounted for 84 percent of global research and development (UNDP 1999:67-68).

3.1 **"Brain power"**

Let us consider in some detail the example of India and research and development in one of the "knowledge intensive industries" the software industry in order to determine the extent of the spread of benefits presumed to be associated with the development of information and communications technology industries. To keep up with the speed of innovation, skilled information and communication technology workers are highly in demand for their "brain power", from developed or developing countries, to work in high-technology industries (Battle 2000). Outside of the United States, India has the largest pool of skilled workers. The United Kingdom, Singapore and Ireland²¹ are trying to attract Indian software experts – some who have become multi-millionaires²². Germany is recruiting thousands of engineers or scientists from India for high-technology industries²³. In Silicon Valley about 7,000 companies are run by Indian immigrants (Karon 2000). In the United States there are an estimated 1,6 million skilled information and communication workers needed this year and in Europe 1,7 million by 2003. In Internet skills the skills shortage gap is the most marked at 33 percent. Estimates are that billions are being lost because of lack of innovation and these skills shortages (Smith 2000; US battle 2000).

However this worldwide recruitment of highly skilled professionals in information and communications technology only affects a minority of workers. These workers have mobility

²¹ Ireland is said to have benefited from the Internet and is now one of the world's largest software exporters. This has led to a high growth rate although large sections of the Irish population remain excluded (Atkins 2000; OECD 1999a).

²² Sabeer Bhatia was creator of Hotmail and Azim Premji is one of the world's five richest people according to Forbes (Devraj 2000).

²³ For decades Germany has employed low-skilled, low-waged Indian *gastarbeiters* or guest workers. Now Germany needs highly skilled information and communications technology Indian workers. But because of increasing unemployment, dropping living standards, and the consequence of rising xenophobia, there are increased restrictions on the employment of Indians. In Berlin there are openly racist slogans, "*Kinder statt Inder*" "Children not Indians"

and flexibility as long as their skills add value and produce profits. But the vast majority of workers are in low paid and low skilled jobs, if they have a job at all, and there is very little prospect of their labour mobility (Atkins 2000; Gardner 2000).

In India, despite the recruitment of high-technology workers and the development of a domestic software industry able to produce for the global market, their software industry remains isolated from the majority who are struggling to survive (Dugger 2000).

India's information and communications technology sector is relatively successful. It is doubling its output about every 18 months. Its share of the world market for software is close to 20 percent. Of the Fortune 500 companies 203 companies are outsourced to companies in India. For those in the \$5 billion software industry or profiting from high technology stock prices, the potential of information and communications technology industries might be considered beneficial (Gardner 2000).

However only 280,000 people are employed in this industry - a tiny minority of the Indian population of 1 billion. Further these high technology industries only generate 1 percent of GDP. These high-technology companies benefit from tax concessions that could be a source of government revenue for social welfare and to help towards eliminating poverty. Instead they do not pay the 38,5 percent corporate tax and are exempt the 40-60 percent customs duty for imported items (Dugger 2000; Gardner 2000).

The Internet is creating a digital divide in India according to Kirti Jayaraman, an education expert. It is found only in the cities and confined to the "elite classes who may as well be living

used by the Christian Democratic Union to prevent Indians from immigrating (Atkins 2000).

on a different planet” (Devraj 2000). This digital divide is evident in the schools. In wealthier middle-class urban schools English is the language medium and the Internet is available whereas in poor urban schools vernacular languages are used and they lack tables, chairs and roofs, and have no Internet access (Devraj 2000). The digital divide is an aggravating factor reinforcing the existing poverty and misery in India. The dependency of globalisation and the new economy on the Internet increases the divide between those with access to the Internet and those without – between the haves and have-nots.

For the majority of the Indian people not included in the information and communications technology sector, living outside the "cyber towers" in Hyderabad or "silicon city" in Bangalore, in the slums and villages, the reality is grim. In the villages, women and children earn less than \$0.50 a day in the fields. There is only an oxcart for transport, no clinic, and the dirt road (no information superhighway) is impassable in the rainy season, electricity is supplied for only eight hours a day often of a low voltage. These villagers are typical of the majority of the Indian population and not those employed in high-technology jobs (Dugger 2000).

One-third of the population, or 300 million, lives in absolute poverty. Over 50 percent of women and 25 percent of men are illiterate. Over 50 percent of children below 4 years are malnourished and suffer stunted growth. More than 30 million children between 6-10 years do not attend school. In an increasingly globalised world these excluded millions of Indians remain untouched by the Internet and any benefits of the information society (Dugger 2000).

Adding to existing problems in India there is an increasing brain drain as highly skilled workers

are the most sought after in developed countries. Yet there is no diffusion of the benefits of the information society in India. There is an acute bottleneck in education and unless this is addressed not only will there be too few Indian graduates for foreign jobs but too few to meet the needs of the growing Indian high technology sector. Over 200,000 people competed for 2,200 places at the six Indian Institutes of Technology (IITs) from where graduates are coveted and poached internationally (Gardner 2000).

3.2 Control of the market

Turning away from India the global control of the market in the so-called knowledge-industries will be considered. This control continues to be held by the developed countries and excludes the developing countries. This makes it extremely difficult for any developing country to compete, as shown with India despite having highly regarded skilled workers. Looking at only the top 10 companies, which are controlled by the developed countries, and the percentage of the global market in their industry then the extent of their monopoly control is conclusive. The top 10 companies own:

- * In telecommunications 86 percent of the global market of \$262 billion.
- * In pesticides 85 percent of the global market of \$31 billion.
- * In computers 70 percent of the global market of \$334 billion.
- * In veterinary medicine 60 percent of the global market of \$17 billion.
- * In pharmaceuticals 35 percent of the global market of \$297 billion.
- * In commercial seed 32 percent of a \$23 billion industry (UNDP 1999:67).

With information and knowledge said to be the backbone in the new society, and the Internet the key tool to process, generate and communicate the information, it is genetic codes and

software programs where the greatest profits are made. The pattern of profits in the most profitable industries of biotechnology and computers indicates the degree to which the developing countries are excluded. In software the global market was \$79 billion in 1994 of which the OECD countries accounted for 94 percent. In biotechnology, the Amgen biotechnology company has a monopoly on a drug worth more than \$60 million an ounce. These huge profits are protected by the software, pharmaceutical and agricultural companies for their private ownership and control of knowledge or information. Increasingly tighter intellectual property rights and patents are used as knowledge or information is privatised (UNDP 1999:68-69).

Originally patents were taken out in the United States for inventions using nuts and bolts. Scientific theories, ideas and artistic works were excluded. But today capitalists are using patents to protect their own interests and profits, for example, to prevent the developing countries developing computer software and generic drugs (Patently 2000). Increasingly patents are being exercised in information and communications technology. At the end of the 1990s one in five patents was for information and communication technologies granted by the United States Patent and Trademark Office (USPTO). This was an increase from one in ten in the early 1990s (OECD 1999a). Again there is almost total exclusion of the developing countries while developed countries hold a staggering 97 percent of all patents worldwide (UNDP 1999:68).

Intellectual property rights are used just like patents for privatising knowledge and for protectionism by the developed countries. In 1994 the WTO initiated the Trade-related Aspects of Intellectual Property Rights (TRIPS), a multi-lateral agreement on intellectual

property. The World Intellectual Property Organisation's Patent Cooperation Treaty in 1979 had fewer than 3,000 patent application claims. But in 1997 there were 54,000 applications. In developing countries the rights of indigenous people are ignored in the rush for patents and indigenous knowledge which is appropriated usually without, or with minimal, compensation by developed countries. More than 95 percent of gene transfer patents are controlled by only 5 biotechnology firms in the United States and Europe (UNDP 1999:67-68).

Money for research and development exists for drugs that are profitable, but unprofitable vaccines against malaria or other mainly developing country diseases are not part of the "knowledge-intensive industries" search for profits. Only 0.2 percent of health related research and development worldwide goes for pneumonia, diarrhoeal diseases and tuberculosis although they account for 18 percent of the global disease burden (UNDP 1999:68-69).

Research is also considered highly profitable in biotechnology. Yet, there is little need for genetically modified or engineered food. This is because enough food is produced daily to feed every person a daily diet of 2,5 pounds of grain, beans and nuts, a pound each of meat, milk, eggs, fruit and vegetables (Karon 1999). Although wars and droughts affect food production and distribution the basic reason for hunger and starvation is that food production and distribution is based on profit and not need. The poor, even in the developed world, suffer because they are unable to afford decent food.

What is needed is research and development into environmentally clean information and communications technology systems because highly toxic gases and chemicals are used for semiconductor manufacturing (Smith 1999?). An average microchip processing plant uses

enough power to run 50,000 homes and therefore the demand for electricity is increasing (Davis 2000). Computers require an uninterrupted flow of current to function. Therefore environmentally clean sources of electricity are needed. Research should be done into solar and wind systems resistant to sand, storms and humidity, and accessible to remote regions. Language translations are needed as the majority of Web pages are in English, voice browsers and information delivery and touch screen research are already available but could be developed further for the illiterate or those people with low education levels. As regards contents, instead of millions spent in research on software, biotechnology, games or entertainment, more should be spent on basic health, or education. But these are not profitable areas for new technology companies (UNDP 1999:74).

Information and communications technology is said to be key for economic and social development. But economic and social development can simply mean the daily struggle to survive or it can mean the improvement in standards of living (Castells 1998). The most profitable and successful example of information and communications industry is Silicon Valley in California in the United States. Therefore it would seem logical that in Silicon Valley would be found the greatest social development in the United States and this will be investigated. Silicon Valley is considered the prototype of the new economy by many economists (Gumbel 2000). To be part of, or the desire to be part of the information society, is to part of Silicon Valley.

4 Silicon Valley

Silicon Valley in California is the "monstrously affluent epicentre of America's high-tech revolution" on which the new economy is based (Gumbel 2000). It is the embodiment of the new economy, the digital future. The Internet boom means an estimated 63 millionaires are made every day through new ventures and stock options (Gumbel 2000). This is the attraction of Silicon Valley and the information society. Inclusion means millions spent on luxury goods and opulence. Bill Gates's home cost over \$100 million (Elliot 1999).

But what is the reality for the majority of people in Silicon Valley? "There are vast social and economic disparities between the elite and the rest" (Gumbel 2000). More than 70 percent are not in highly paid technological or professional jobs. For them life is increasingly difficult. Even workers earning \$15,000 to \$50,000 a year in Silicon Valley are unable to find affordable housing and make ends meet. These "salaries that would make them middle-class in any ordinary setting put them on the verge of poverty" (Gumbel 2000). A very high 40 percent of Silicon Valley workers are in part-time, temporary, or contract jobs - double the United States average - stripped of benefits and terminated without notice (Gumbel 2000).

Household income of the poorest 20 percent grew by only 7.5 percent between 1996-1998 while the income of the top 20 percent increased by 28.4 percent. The income of the top 20 percent was up from 1992 but the bottom 20 percent was in fact lower than in 1992. Jobs grew at only 1.7 percent dropping from 5.2 percent in 1997. Exacerbating this problem fewer jobs are expected to be created despite the fact that venture capital in startup companies doubled in 1999 to \$6 billion. The gap is growing between the skilled and unskilled and this is exacerbated by the new economy (Joint Venture 2000).

There is a clear digital divide in Silicon Valley not only on the basis of income, but also on the basis of education, sex and race. There is a shortage of highly qualified workers in Silicon Valley and educational institutions in Silicon Valley are unable to provide enough skilled workers. The average high school graduation rate in Silicon Valley in 1999 was 75 percent. But for Hispanic students it was only 57 percent (Joint Venture 2000). In East Palo Alto 65 percent of the school students have problems with English and 80 percent are poor enough to qualify for subsidised lunches (Digital 2000). In the Bay Area 59 percent of whites frequently use a computer whereas only 37 percent of Hispanics. The shortage in high-technology workers results in an annual estimated \$3-\$4 billion loss in potential profits in Silicon Valley (Joint Venture 2000).

For the venture capitalists and the new super-rich the Internet has brought massive wealth. Homes are bought for \$4 million cash or offers are given of share options for sale inducements. But for ordinary workers, such as, the cleaners, restaurant workers, shop assistants, who are unable to afford housing, are forced to sleep in cars, share single housing units between 5-6 families, or become night riders sleeping on Bus no. 22 which travels all night long between Menlo Park and San José down the heart of Silicon Valley (Gumbel 2000).

There are no unions to protect workers in Silicon Valley and the high-technology companies and industries have fought against providing union scale wages and working conditions. Miscarriages are high amongst women working in chemical handling jobs. Environmental pollution is caused from highly toxic gases used by semiconductor manufacturing (Smith 1999?; Henderson 1991:40-41). Power blackouts result because of thousands of computers

permanently online and air conditioning kept on to prevent them overheating²⁴ (High-tech 2000). Millions of litres of water are used by these industries every day. Over 12 million computers, a total of 300,000 tons, are disposed of annually. As part of globalisation high-technology firms use the North Atlantic Free Trade Agreement (NAFTA) and General Agreement on Tariffs and Trade (GATT) to perpetuate sub-standard workplaces exploiting workers on the United States-Mexican border and in Asia (Smith 1999?).

This nightmarish reality of the deepening polarisation of society is the digital future in Silicon Valley. Information and communication technology has not brought economic and social development for the majority in Silicon Valley. In fact it is causing increasing misery and a growing digital divide. In the global information society there is a similar pattern with a small percentage of people included and the majority excluded despite economic growth and vast profits being made (Castells 1998:10).

5 20:80 society

Towards the end of September 1995 in the luxury of the San Francisco's Fairmont Hotel with its back to Silicon Valley, 500 leading world politicians, business people, and scientists met to discuss the twenty-first century and the "new civilisation". The debate on "technology and work in the global economy" discussed the ease with which computer firms needing "brains" can hire labour from anywhere in the world, as seen in the numbers hired from India. There was unanimous agreement that very few workers are needed in information and communications technology companies. Sun Microsystems, developers of Java programming language, said that although they employed about 6,000 workers in reality only an astonishing

²⁴ The electricity crisis is a direct result of the deregulation and privatisation of the electricity industry four years ago. This removed any incentive to produce surplus energy for

6-8 people are critical²⁵. The future was summed up in the formula of a 20:80 society. Only 20 percent, one-fifth of the population, would be needed to keep the world economy running and therefore be included to participate actively in society while 80 percent would be excluded (Martin 1997:2-3).

Is this 20 percent inclusion and 80 percent exclusion of the population from society an exaggeration? Possibly. But certain statistics suggest otherwise.

Considering the top 20 percent of the world's population, who live in the developed countries, and the bottom 20 percent in the poorest countries the following pattern emerges.

- * The top 20 percent account for 86 percent of the world GDP, 82 percent of world export markets, 68 percent of foreign direct investment (UNDP 1999a).
- * The bottom 20 percent account for only 1 percent of GDP, world export, and foreign direct investment (UNDP 1999a).
- * The gap in income between the top 20 percent of the population and the bottom 20 percent has risen from 30 to 1 in 1960 to 74 to 1 in 1997 (UNDP 1999a)²⁶.
- * The top 20 percent of the world's population living in the developed countries account for 86 percent of total private consumption expenditures (UNDP 1997b).

emergencies as it was not cost effective (High-tech 2000).

²⁵ Market capitalisation of Internet companies has not meant increases in the numbers of people employed. America On-Line employs only 10,000 people although valued at \$66.4 billion compared with General Motors who employ 600,000 with a market value of \$52.4 billion (Castells 1999:6).

²⁶ Between 1979-1993 the bottom 10 percent of the population in the United Kingdom had a fall in income of 17 percent and in the United States for the bottom 20 percent wages fell 23 percent with only the top twenty percent experiencing a wage increase. By 1994 real wages were the same as in the 1950s (Thurow 1996:23-24, 35).

- * The bottom 20 percent account for only 1.3 percent of total private consumption expenditures (UNDP 1997b).

Similarly, the top 20 percent living in the developed countries have benefited from information and communications technology.

- * The top 20 percent of the world's population in the developed countries have 74 percent of telephone lines (UNDP 1999a).
- * The poorest 20 percent have only 1.5 percent of telephone lines (UNDP 1997b).
- * Eighty-eight percent of Internet users are in the developed countries that have only 17 percent of the population (UNDP 1999a).
- * English is used in about 80 percent of websites yet only 10 percent of the world's population speaks English (UNDP 1999a).
- * A massive 99 percent of global spending on information technology is from only 55 countries (UNDP 1999b:62).

But the 20:80 society is not only between but also within the developed and developing world. In a developing country, Brazil, the top 20 percent control two-thirds of the country's income whereas the poorest 20 percent earns only 2.5 percent (Wolfensohn 2000).

In the developed countries there is a widening gap and the exclusion of sections of the population. There are 100 million people in developed countries suffering from malnourishment and deprivation. Almost 200 million will not live until 60 years. Over 100 million are homeless. Over 37 million are unemployed (UNDP 1997b).

6 Digital divide

There is a growing digital divide in society with the increased exclusion of individuals, communities and countries. The United States, a wealthy country, will be examined as an example of the digital divide between the connected, information rich, and the unconnected, information poor (UNDP 1999:58). Generalised throughout American society there is a digital divide between those who have Internet access and are included and those who do not and are excluded. The digital divide is based on access to telephones, access to schools, income levels, gender, location (rural or urban), race and the ability to participate electronically even if marginalised (Benton 1998).

Only 6 percent of Americans do not have telephones but the poor who do not have telephones are discriminated against in terms of opportunities for communication, networking, and employment. Lack of Internet access accentuates economic, social and political exclusion in an increasingly competitive environment (Benton 1998).

Schools in poorer American communities have less access to the Internet than in the wealthy areas. In 1996, 75 percent of schools in wealthier areas had Internet access compared with 55 percent in poorer areas. About 3 percent of schools are so dilapidated that Internet access is not possible. But the term access to the Internet hides an inequality as access can mean one computer or it can mean a well equipped computer laboratory as found in the wealthier schools. However it is not only access but how the Internet is used which affects opportunities. Teacher training affects how the Internet is used. In wealthier schools usage is experimental, complex, and analytical - valuing writing and interpretation which are skills

needed for high-technology jobs (Benton 1998).

In the United States households with annual incomes over \$75,000 are about 10 times more likely to have a computer at home and 20 times more likely to access the Internet than the lowest level incomes. Although more households had access to personal computers between 1997-1998 the digital divide increased between the highest and lowest income levels by 29 percent. Between the highest and lowest education levels the digital divide increased by 25 percent (NTIA 1999).

Women and girls are also more likely to be excluded from access. In typical Internet start-up companies there are few women except working as receptionists. At the end of 1999 women represented 29 percent of the workforce in the American technology sector, down from 40 percent in 1986. Only 5 percent of venture capital is spent on businesses founded by women. A major concern for women is given that start-ups are considered responsible for an ever increasing percentage of United States gross domestic product the reality will be even greater exclusion of women in the dominant economic sector except in low- paid jobs (Griffith 2000). Single female parent families are also less likely to be connected (NTIA 1999).

In the rural areas both high and low income groups are less likely to be connected than urban areas. The lowest urban incomes are twice as likely to have Internet access than in rural areas. Both rural and poor inner city areas lack basic infrastructure of broadband networks allowing fast Internet access, transmission or downloading of large text or multimedia documents (Digital 2000; NTIA 1999)

Race, as well as income and education levels, is an indicator of the digital divide. In the United States whites and Asian/Pacific Islanders are more likely to be connected. Whereas Hispanics and blacks are more likely not to be connected (Digital 2000; Jurich 2000; NTIA 1999). The gap between white and black or Hispanic access to the Internet has grown since 1997. Black and Hispanic households are about one-third as likely to have access to the Internet as Asian/Pacific Islanders and two-fifths as likely as whites. Amongst Native American Indians the digital gap is probably greatest because of the high level of poverty and geographical isolation. Unemployment rates are 73 percent. In the Navajo Nation only 22.5 percent of homes have telephones. The Internet is perceived as important to Native Americans because it is another means of preserving their culture such as language²⁷ (Digital 2000; Le Blanc 1999; NTIA 1999).

The American Internet user fits into the worldwide profile of the average Internet user who is male, under 35 years, with a high income, university education, urban based and English speaking - an elite minority (UNDP 1999b).

Increasingly communication is electronic in society, with 75 percent of American government transactions with individuals performed electronically. This applies to unemployment, social security or welfare benefits or food stamps. There are growing sections of communities, unemployed, physically or mentally disabled, ill, elderly, those unable to cope, and the homeless who are excluded. They may even be regarded as "not existing" if they are not registered electronically for social benefits (Benton 1998; Böhme 1992:46, 48; Castells 1998).

²⁷ See Twist 2000? and the Dakota language homepage:
<http://www.alliance2k.org/daklang/dakota9463.htm> (Le Blanc 1999).

6.1 Recognition of the digital divide

There is growing recognition of the digital divide worldwide. Access to, and the ability to use, computers and the Internet are said to be necessary in order to participate fully in society - economically and socially. But there is some recognition that there is unequal access because of income, education, race, sex, location (urban, rural or inner city) and there is a growing concern that the digital divide will deepen and reinforce existing divisions (Clinton-Gore 2000).

Greater access to the Internet and education or skills are proposed as solutions to the inequality and declining standard of living enabling workers to get high-technology jobs. But not all workers in a digital economy are needed for high-technology jobs. Inherent in the new economy is that the majority of jobs created are for low skilled workers and are service jobs which under capitalism are low paid jobs. In the developed countries manual labour or unskilled jobs are being paid at increasingly lower rates (Rabinovitz 2000; Slaughter 1997).

In the United Kingdom research suggests that 90 percent of new jobs require information and technology skills. However 52 percent of people with low incomes have no computer experience and therefore cannot compete for jobs (Britain 2000).

To address the digital divide the governments in the United Kingdom, United States and Sweden are launching various initiatives costing millions of dollars.

Concerned with growing social exclusion and the digital divide the British government has set up a Social Exclusion Unit to address this problem. In April 1998 the government released its strategy for Britain to improve its quality of life in the information society. This included the planned provision of Internet access to all public libraries by 2002. This complements the

“New Library: The People’s Network” plan which attempts to address the digital divide of the information haves and have-nots through public libraries which are “the essence of inclusion” (LIC1997b) public libraries need to be the “communications backbone of the information society” (LIC 1997). The cost of this initiative is £770 million and funding would come from the government, business and the lottery (LIC 1997)

In March 2000 the British government in response to a report by the Social Exclusion Unit has launched initiatives to ensure that people with low-incomes and those living in deprived inner cities have access to the Internet, e-mail and other information and communication technologies. The initiatives the government has launched include a £252 million initiative to create 1,000 new technology training centres in sports clubs, pubs, community centres, houses, churches, post offices, bus terminuses and train stations. Over £1 billion will be invested in Internet access and training in schools. Jobseekers will be given vouchers of £400 for computer training (Britain 2000).

Similar to the British “People’s Network” is the public library initiative by the Gates Foundation in the United States and Canada to bridge the digital gap is providing Internet access to public libraries because of “their heritage of providing free information”. Studies on Internet access in the United States have shown that public libraries provide important access. Those earning less than \$20,000 are more than twice as likely to get access through public libraries than those earning more than \$20,000. Blacks are more than twice as likely than whites to use public libraries for Internet access (Gates 2000). The Gates Library Initiative is the cornerstone of the Gates Learning Foundation that is funded at \$400,000,000 (Cook 1999). Most of the money is spent in the United States although \$17 million was given to

public libraries in poor Canadian communities and \$4.2 million to the United Kingdom's Library and Information Commissions (LIC) for public libraries in disadvantaged communities (Gates 2000).

The United States government in February 2000 proposed that the government would give \$2 billion in tax incentives to encourage companies to donate computers, sponsor community Internet centres, and to provide training. For Internet training of new teachers \$150 million would be allocated. For the creation of 1,000 community Internet centres \$100 million would be given. To promote innovative applications in disadvantaged communities \$50 million was allocated. A further \$25 million would be used to improve broadband networks in rural and inner city areas, and \$10 million would be used to advance information and technology careers for Native Americans (Clinton-Gore 2000).

Even Sweden, which of the developed countries has the narrowest digital divide, recognises that there is still the problem of sections of its population being excluded. The aim is to bring high speed broadband networks to 5 million households in Sweden, including the rural and remotest northern sparsely populated areas. The cost is estimated at SKr17bn (£12.56bn) half to be paid by the government and half by the private sector. Similar proposals are being promoted in Singapore, Hong Kong and Canada (Castells 1998:7; George 2000).

Although these amounts might seem fairly significant, increasingly governments are cutting social welfare and it will be likely that they will come under pressure to cut these projects as well. As the digital divide increases, more money will be needed to be spent on social welfare and to bridge the digital divide. But there is plenty of money in the private sector that could be

used to bridge the digital divide that it originally helped create. Take the wealth of just three men, Bill Gates (Microsoft), Warren Buffet (Berkshire Hathaway), and Paul Allen (ex-Microsoft). Together these three men have a combined wealth of \$156 billion that is greater than the combined gross national products (GNP) of the 43 poorest countries (Karon 1999). Gates alone in 1999 was worth \$97 billion which is more than the GDP of Portugal at \$84 billion or Ireland at \$81 billion (Gates 1999).

7 Conclusion

The question that has been addressed in this chapter is whether the information society will contribute to the reduction, or eradication of poverty in society?

The conclusion drawn is that the information society instead of leading to the eradication, or the reduction, of poverty results in increasing exclusion from this society for many people. The information society or the "new economy" is driven by the Internet. As a result of the Internet there is an additional factor, the "digital divide", increasing poverty and inequality.

The South East Asian "miracle" countries are upheld as examples of the benefits of the Internet. But these countries benefited from the production of semiconductors based on cheap labour and not from the use of the Internet. However this "success" of the production of semiconductors cannot be generalised to all countries because there would be overproduction. At the same time the production of semiconductors has increased the exclusion of people within these countries from the benefits of the Internet and the information society.

The United States is held up to Europe as a country that has benefited from information and

communication technology, particularly the Internet. It is said that its long period of uninterrupted growth in the 1990s was a result of information and communication technology. But the role of this technology in the productivity figures is inconclusive.

The new economy is said to be the information society because it is based on information and communications technology. But it is also called "casino capitalism" driven by speculative wealth from new technology stocks. This is increasing the gap between the haves and the have-nots as the rich get richer and the poor get poorer. This is evident in the fact that half of these shares are owned by the top 1 percent of shareholders and that CEOs earn 410 times an average worker's wage. Whereas the average worker earns less today than at the beginning of the 1960s and to make ends meet works at double or triple jobs. Moreover there is no longer job security as jobs are increasingly part-time, contract or casual.

This is most evident in the service industry that is said to be growing as a result of the information society. But service workers are not highly paid "knowledge workers". Only a few are in highly paid financial or medical services. The majority of service workers are low paid earning 40-50 percent lower than in manufacturing.

"Knowledge workers" are needed for research and development, particularly in software development, to maintain the competitive edge. India is supplying much of this "brain power" to the United States and Europe resulting in a local brain drain. In India software industries remain isolated excluding the majority of the population. Only 280,000 people out of a population of 1 billion work in and benefit from these industries. But for the excluded majority there is high illiteracy and rampant poverty with a growing divide between the haves and the

have-nots.

However successful India's software industry, the control of the market remains in the developed countries, primarily the United States. In addition, developing countries are prevented from entering markets because of patents and intellectual property rights also mainly held in the United States. While research goes into developing drugs from which profits can be made, millions die from curable diseases of malaria, pneumonia, diarrhoeal diseases or tuberculosis.

In the heart of the information society, in Silicon Valley, in the United States, there is a stark divide between those who are excluded and those included. Between those who sleep on buses or own \$4 million houses paid for in cash. Exclusion exists for 70 percent of workers. There is double the national average of workers in part-time, casual or contract work. Further trade unions do not exist and working conditions may be dangerous to health and damage the environment.

There is recognition from the United States and other governments that a digital divide exists between the haves and the have-nots. The fear is that this will result in a social crisis and social unrest.

In the United States there is growing exclusion for Internet access for those with low incomes, poor levels of education, women, blacks and Hispanics.

The conclusion of this chapter is that the Internet is resulting in greater exclusion. There is

overwhelming evidence of this growing exclusion and polarisation in society in India and Silicon Valley in the United States although in India the scale and intensity of extreme misery and exclusion is greater. The result is deepening poverty for growing numbers of people as individuals, communities, countries, and virtually whole continents, such as Africa, are excluded in the information society.

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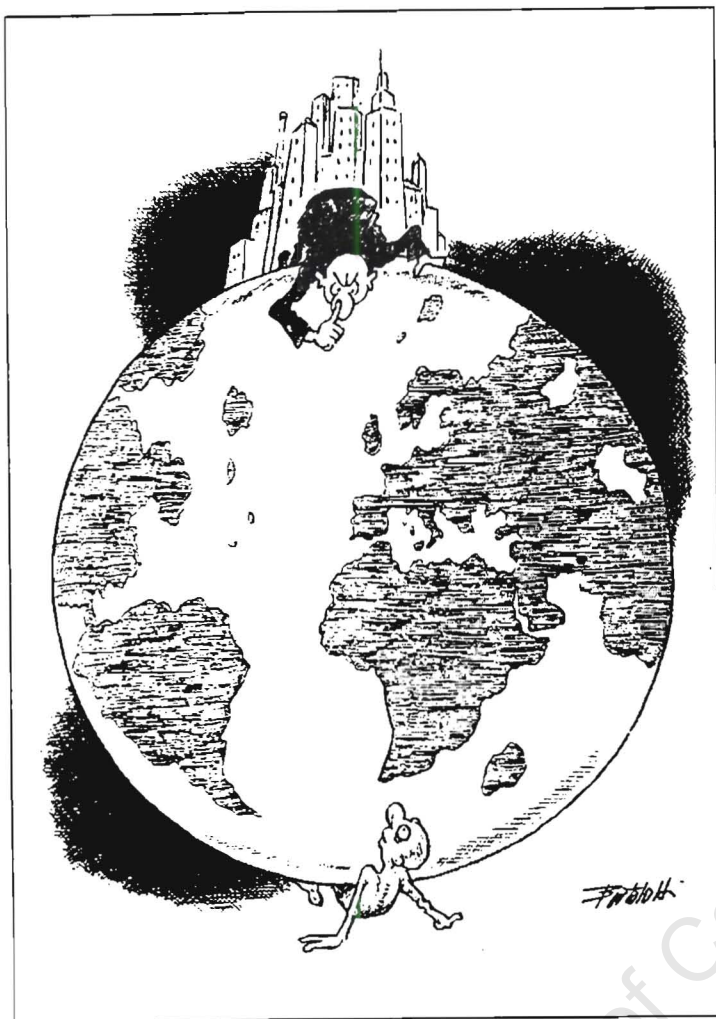
CHAPTER 4

Wiring Africa

Africa is the most "backward" underdeveloped continent - the most excluded continent from the benefits of the global economy. This is evident in the following statistics.

- * Sixty percent of Africa's population live in absolute poverty and "things are getting worse" (ILO 1998a).
- * Forty percent of people in sub-Saharan Africa live on less than \$1 a day (World Bank 1996).
- * The average African household consumes 20 percent less today than 25 years ago (UNDP 1998:2).
- * Seventy-four percent of people in sub-Saharan Africa fetch water daily (World Bank 1996).
- * Ninety-two percent of people in Africa have no access to electricity (African Power 1999:13861).
- * Only 15 percent of Africa's population is in formal employment (ILO 1998a).
- * Forty-one percent of all children between 5-14 years old in Africa and 50 percent in sub-Saharan Africa are child labourers (ILO 1998b).
- * Life expectancy for 30 percent of Africa's population is 40 years (UNDP 1998b).
- * Fifty percent of sub-Saharan women are illiterate (UNICEF 1999).

However it is said that the information society, and in particular the Internet, will transform this situation and bring Africa fully and equally into global society. Social and economic



Source: Financial Times 26/27 August 2000

This cartoon was part of a collection of Italian cartoons on globalisation. The vision of the cartoonists is "of a globalised world which is much more of a nightmare than an opportunity. Drawing after drawing has the wretched of the earth – usually depicted as an African – crushed, cheated and betrayed by a movement whose self-billing as the harbinger of wealth and modernisation is seen as transparently mendacious. Example: a globe crushes a black man beneath it. He looks up – a white man in a suit, with a downtown cityscape behind him, is leaning over the top of the globe, his fingers to his lips – 'Ssshhh!'" (Drawing 2000).

development is possible with the Internet because "information and communications technology can be a tremendous force for human development for all those connected - by providing information, enabling empowerment and raising productivity" (UNDP 1999:58).

The position that social and economic development results from the Internet is linked to the idea that it is the Internet which is driving the new economy or information society and globalisation, as explained in Chapter 1. This position is supported by the United Nations (UN) Economic Commission for Africa (ECA), the World Bank¹, the United Nations

¹ The World Bank calls itself a "Knowledge Bank" because of the importance of knowledge or information in the world economy (Wolfensohn 1999).

Development Programme (UNDP), the International Telecommunications Union (ITU) and other organisers of the various conferences and meetings on the information society in Africa which are described in this chapter - beginning with the Bangemann Report (Knight 1996:1; ECA 1996c:1).

This chapter will trace the history of significant conferences, meetings and events which were aimed to draw Africa into the information society by "wiring Africa", i.e. connecting Africa to the Internet. An evaluation of the results of these aims is followed up in chapter 4 with a particular case study, Lesotho.

1 Meetings and events

1.1 Bangemann Report

The European Council in Brussels in December 1993 requested a report on Europe and the information society² to enable the building of information infrastructures. In June 1994 at the Corfu European Council Meeting the report was presented, titled The Bangemann report: Recommendations to the European Council - Europe and the global information society (Bangemann 1994).

The report claimed that the Internet was creating an information revolution enabling knowledge and information to be produced, processed, stored, retrieved and disseminated without restriction by time, space or quantity because of electronic networks. The report urged Europe to participate in the information society or new economy in order to maintain its

² The European Union (EU) uses the term the information society in "response to the revolution in society triggered by the rapid developments in information and communications technologies" (European Commission 1998?).

competitive edge. It warned that without universal service and access to the Internet there was an increasing danger of creating a "two-tier society of have and have-nots" - of those included and those excluded (Bangemann 1994).

Despite the report's concern of growing numbers of excluded people from the information society, the "Action Plan" for an information society was based on private profit and ownership and not on public funding and ownership and universal access (Bangemann 1994). Neo-liberal policies of liberalisation, deregulation and privatisation of telecommunications were essential (Bangemann 1994). If Europe was to compete with the United States and not to lag further behind it needed to take a leading role because:

"The first countries to enter the information society will reap the greatest rewards. They will set the agenda for all who must follow. By contrast, countries which temporise, or favour half-hearted solutions, could, in less than a decade, face disastrous declines in investment and a squeeze on jobs" (Bangemann 1994).

The report recommended ten fundamentals for building an information society based on implementing a single European regulatory framework, standardisation, interconnection and inter-operability. These are: teleworking, distance learning through a network of universities and research centres, telematics³ services for small and medium enterprises (SMEs), road traffic management, air traffic control, health care networks, electronic tendering, trans-European public administration network, and household Internet access called "city information highways" (Bangemann 1994).

The Bangemann Report on the information society was a significant benchmark marking

³ Telematics originates from the french term 'telematique' and refers to computer services using telecommunications. The European Commission is a key advocate of the term (Tagish 1995).

possibly the first major official initiative for the necessity of the European Union's participation in the global information society.

1.2 G7⁴ Ministerial Conference on the Information Society

From 25-26 February 1995 the Group of Seven (G7) Ministerial Conference on the Information Society took place in Brussels. Previously at the Naples Summit in July 1994, the G7 recognised that the information society, based on the Internet and the movement of information globally, was growing worldwide but that the information society needed to be expanded into a global information society, a "new age" (EC 1995:2). Therefore the objective of the G7 conference in Brussels was the development of a global information society and a global information infrastructure⁵ integrating both the developed and developing countries. To achieve this objective collaboration between the developing and developed countries was needed to bring the developing countries into the new economy (EC 1995:2).

At the conference a meeting was held on developing public and private sector cooperation to build the global information society by a newly formed international group called the Global Information Infrastructure Commission (GIIC) mainly made up of CEOs of information and communications technology companies (Day 1997).

⁴ The Group of Seven (G7) consists of leading industrialised countries namely Canada, France, Germany, Italy, Japan, UK and US.

⁵ In 1994 the International Telecommunications Union (ITU) organised the first World Telecommunications Development Conference in Buenos Aires, Argentina. At this meeting the United States Vice President Al Gore introduced the term "Global Information Infrastructure" to address the social, political and economic issues in both the developed and developing world (Day 1997).

The benefits of the information society for both the developing and developed countries were described as:

"better social integration: the recovery of our sense of community; enhancing the progress of democratic values and sharing as well as preserving cultural creativity, traditions and identities; improving the quality of life; a stimulus to economic growth, job creation and higher economic efficiency; a better balance in economic and social progress between nations; a smoother integration of developing countries into the global economy; the capacity to solve common societal problems" (EC 1995:2).

The key principles established to direct the development of the global information society were based on neo-liberal policies and globalisation including privatisation, deregulation and liberalisation (EC 1995:5, 7). At the same time it was said that universal service and access was needed to promote equal opportunities for all citizens because "access to information is a basic right for every citizen" (EC 1995:6). Privacy and the rights of citizens, including intellectual property rights, needed to be protected using reliable and secure systems (EC 1995:8, 9). Standardised and inter-operable global systems were needed which could require bilateral or multilateral country agreements (EC 1995:6, 8).

Eleven G7 information society project themes were identified. These were: global inventory of major national and international projects; studies for promoting or developing the Internet; global inter-operability for broadband networks; distance learning; electronic libraries, electronic museums and galleries; environmental natural resources management; global emergency management; global health care applications; government online; global marketplace for small and medium businesses; and maritime information systems. Diversity of culture and language would be reflected in the content on the Internet (Kerry 1996:1-3).

For developing countries the Internet offered the possibility of "leapfrogging" stages of

information infrastructure development with increasing access to it as costs drop. Easy access to and exchange of information using the Internet would promote democracy, education and integration into the global economy resulting in social and economic development (EC 1995:2).

At the conference Thabo Mbeki, former Deputy President of South Africa, spoke of the need for South Africa and the developing countries to be part of the information society because "information and communication technologies constitute an engine for economic development" (Mbeki 1995:2). But the task he explained was not to bring the developing world onto the "Information Super-Highway as a second-class road user" (Mbeki 1995:4). However the scale of the task was huge because "more than half of humanity has never made a telephone call. There are more telephones in Manhattan than in all of sub-Saharan Africa" (Mbeki 1995:1). However to assist in achieving the aim of bringing Africa into the information society in Southern Africa, and the rest of Africa, the Internet needed to be integrated regionally. In Southern Africa, South Africa could play a critical role as a regional hub (Mbeki 1995:3).

Mbeki suggested that a follow-up conference in South Africa was needed to bring together developing countries, the G7 and European Union to work out a common framework on the global information society, including strategy, policies, finances, and collaboration. The Information Society and Development (ISAD) Conference was held in South Africa in 1996 (Mbeki 1995:4; NITF 1996a).

1.3 African Regional Symposium on Telematics⁶ for Development

Before the ISAD Conference, the first meeting in Africa to focus on the Internet or telematics was held in Addis Ababa, Ethiopia from 3-7 April 1995. It was called the African Regional Symposium on Telematics for Development. The symposium was described by Kinsley Y. Amoako, Executive Secretary of ECA and Under-Secretary General of the UN, as "the first critical milestone for information technology in Africa" (Amoako 1998:2).

The symposium was organised by ECA with its partners the ITU, UNESCO, and International Development Research Centre (IDRC), who worked together through the African Networking Initiative (ANI⁷) established by the International Telecommunications Union Telecommunication Development Bureau (ITU/BDT) in 1995. From fifty countries over two hundred and fifty information and communications technology (ICT) experts, non-governmental organisations (NGOs), donors, business leaders and most unusually government officials attended. Up until this symposium it had been a considerable problem to bring network operators and government telecommunications officials together (Communiqué 1995:1; ECA 1996b:vii; Hall 1995a:3).

The main purpose of the symposium was to move Africa up the "on-ramp of the Information Superhighway", to discuss current connectivity projects and information infrastructure, and to begin the process of promoting the information society throughout Africa (Communiqué 1995:1; Hall 1995a:1). This was because the necessity of the Internet was "not a choice" for

⁶ Telematics is defined in the Communiqué as "the convergence of computing, telecommunications and broadcasting technologies" or the Internet (Communiqué 1995:1).

⁷ ANI has since merged with the African Internet Forum and other groups to form the Partnership for Information and Communication Technologies in Africa (PICTA) (ANI 1999).

Africa. Makha Sarr, ECA Acting Executive Secretary noted that the Internet was fundamental for scientific, social and economic development. At the symposium it was established that of the 33 African countries that had networks⁸ only 4 had full Internet access while 20 countries were without any access at all (Hall 1995b:1).

It was at this symposium that for the first time the concept of "leapfrogging" stages of development was clearly expressed. According to Amoako an information infrastructure based on the Internet was understood to be an essential tool for growth, social and economic development (Amoako 1998:2). The benefits of the Internet were that it enabled even the rural areas of Africa, through enhanced communications and access to information, to have social and economic development. Health, education, trade and commerce as well as inter-regional and international cooperation would be "vastly strengthened" (Communiqué 1995:1).

However statistics given at the symposium showed the weakness in Africa of the telecommunications infrastructure which is essential for the Internet. Although Africa had 12 percent of the world's population it had only 2 percent of the world's telephone lines. As a result of the shortage of telephones the amount of time spent on calls per person in Africa was less than a minute a year. Telephone line installation costs and call costs were high and a single page of fax could cost \$25. The majority of people in Africa were therefore excluded from telecommunications (Hall 1995b:2).

⁸ Many of the networks were the result of initiatives by the UN Economic Commission for Africa (UNECA) through the project called Capacity Building for Electronic Communication in Africa (CABECA) which is funded by the International Development Research Centre in Canada and in West Africa initiatives by the United Nations Educational Scientific and Cultural Organisation (UNESCO) using French government sponsorship for the project called Regional Informatics network for Africa (RINAF) (Hall 1995b:1).

The official symposium Communiqué spelt out the dangers if Africa did not participate in the information society; of its marginalisation and a widening gap between the haves and the have-nots (Communiqué 1995:1). The World Bank warned that "if African countries cannot take advantage of the information revolution and surf the great wave they may be crushed by it" (Hall 1995a:1).

Nancy Hafkin, Senior Economic Affairs Officer at ECA, expressed the need for an Africa Plan to commit Africa to a Global Information Infrastructure because it was crucial for Africa to become part of the information society. However a common problem was that government officials wanted to maintain power and control of telecommunications and did not support the implementation or development of the Internet therefore acting as obstacles "at best turning a blind eye, at worst, being constraining" (Hall 1995a:2). Corruption, mismanagement and bureaucratic state controlled telecommunication monopolies as well as authoritarian regimes wanting to control the flow of information were major obstacles to the Internet developing in Africa (Hall 1995a:1). In contrast, the free flow of information contributes to democratisation, human rights and protection of the environment (Communiqué 1995:1). Peter Knight, from the World Bank, argued that the real challenges were not technical or financial, but organisational, political and regulatory (Knight 1995:2).

The solution to this bureaucratic mismanagement and corruption given by the World Bank was competition through neo-liberal policies of privatisation, deregulation and liberalisation. But what competition is there when the top ten telecommunications corporations monopolise and control the telecommunications market? In 1998 their share was 86 percent (UNDP 1999a:1). Furthermore, private investment is attracted to countries only if there are potential profits and therefore Africa is not attractive to most foreign investors. However if Africa can

be exploited it might have some attraction because the value of the world information industry was estimated to be \$7,000 billion and the world total education budget \$6,000 billion therefore "Africa, even at 0.2 percent of the total budget... is seen as a market ripe for exploitation" according to David Walker, Apple Computers (Hall 1995c:1).

But the dangers were that leaving telecommunications supply to the neo-liberal market as suggested by the World Bank would mean that profits would determine who benefited and who did not. This would increase the gap between the rich and poor and between rural and urban areas (Hall 1995a:3).

The cost of an information infrastructure throughout Africa decreases in time as technology costs fall by 50 percent every 18 months. The cost is less than that of an F16 or MIG 29 jet fighter. This would equip every country in Africa with the infrastructure for the Internet and all the training and equipment to operate it (Communiqué 1995:1; Knight 1995:1-2).

Many recommendations were agreed to including the organisation of a high-level lobby to promote and to set priorities for Internet access in Africa. Other recommendations included the creation of the African Continent Telematics Association (ACTA) by the UN, ITU and other agencies to develop a framework for deregulation, licensing and tariff structures.

Regional collaboration on financing was necessary and the Internet should be a component of all donor funding. Technical training was needed. Internet access was urgently required in all African countries taking into consideration local initiatives, gender and language issues. Pilot projects and telecentres,⁹ i.e. centres providing telecommunications and Internet access, in

⁹ Telecentres are also called Multi-purpose Community Telecentres (MCTs) or Multi-purpose Community Centres (MPCCs). These can be set up at libraries, clinics, schools, in shacks,

schools or libraries should be established. Lastly the Organisation for African Unity (OAU) and G15¹⁰ needed to take up the issues of the Internet for development (Communiqué 1995:1-2).

The conclusion drawn by the Communiqué was that

"unless African countries become full actors in the global information revolution, the gap between the haves and have-nots will widen, opening the possibility of increased marginalisation of the continent. This gap will increase the likelihood of cultural, religious and ethnic ghettos leading to regional and inter-regional conflicts" (Communiqué 1995:1).

1.4 **Thirtieth and Thirty-First ECA Conference of Ministers**

Following from the African Regional Symposium on Telematics for Development Symposium, ECA, with the support of its member states, began to take the lead in promoting the Internet in Africa with the aim to bring Africa into the information society. The Thirtieth (or XXX) Session¹¹ of the ECA Conference of Ministers, attended by fifty-three African Ministers responsible for social and economic development and planning, was held (ECA 1996b:vii).

At the ECA Conference of Ministers in May 1995 in Addis Ababa, Resolution 795(XXX) titled, "Building Africa's Information Highway" was adopted. The resolution called for a plan

containers or caravans etc. They provide affordable access to telephones and the Internet as well as to printers, fax machines and photocopiers. IDRC, ITU and UNESCO are collaborating in developing these projects (Ardé 1999; Fuchs 1997:1; Rantao 1999).

¹⁰ The G15 consists of 17 developing countries from Asia, Africa and Latin America - Algeria, Argentina, Brazil, Chile, Egypt, India, Indonesia, Jamaica, Kenya, Malaysia, Mexico, Nigeria, Peru, Senegal, Sri Lanka, Venezuela and Zimbabwe. The G15 was started to encourage co-operation and provide input into international organisations such as WTO and G7.

¹¹ Also referred to as the Twenty-first Meeting of the ECA Conference of Ministers (Hafkin 1999).

of action including ECA setting up a high-level working group, consisting of 11 information technology experts in Africa, to draft an action framework to use the Internet to speed up social and economic development and enable Africa to become part of the information society (ECA 1996b:vii).

Towards this goal the high-level working group produced the document titled, African Information Society Initiative (AIS): An action framework to build Africa's information and communication infrastructure. The draft document of the high-level working group was submitted for peer review when ECA met for the ninth session of the Conference of African Planners, Statisticians, and Population and Information Specialists from 11-16 March 1996 in Addis Ababa. The conference endorsed the position that information and ideas are the "bedrock of modern socio-economic development and the information economy" and endorsed Resolution 795(XXX). The Internet could provide information for rural development (for example, drought warnings or solar energy designs) or for medical uses and government management systems (for example, electronic debt management). Information and ideas were not freely available in Africa yet they were essential for development and for an "information-based economy". Therefore the conference concluded that the Internet was critical for Africa's progress and Africa needs to promote the idea of an African information society. As telecommunications were essential for the Internet and only one in 200 people in Africa had a telephone line the programme developed by the African Ministers of Transport and Communications called the "African Telecoms Green Paper" needed support (ECA 1996c:1-2).

In May 1996 the document called the African Information Society Initiative (AIS): An action framework to build Africa's information and communication infrastructure was submitted to

the Thirty-first (or XXXI) Session¹² of the ECA Conference of Ministers. The document titled, "Implementation of the African Information Society Initiative" was adopted by Resolution 812(XXXI). The resolution stated that the Conference of Ministers believed that the Internet and the information society would accelerate opportunities for growth and development in Africa. The ministers were:

"Convinced that building Africa's Information Society will help Africa to accelerate its development plans, stimulate growth and provide new opportunities in education, trade, healthcare, job creation and food security, helping African countries to leapfrog stages of development and raise their standards of living;

Sharing the vision of an African Information Society which calls for the building of information and decision support systems to enhance policy formulation, fostering a new generation of Africans capable of using information and communication technologies, building African information resources and linking Africa regionally and globally to the information age" (ECA 1996b:1).

1.5 Information Society and Development (ISAD) Conference

The African Information Society Initiative (AISI) was launched at the Information Society and Development (ISAD) Conference from the 13-15 May 1996 in Midrand, South Africa one week after the ECA Conference of Ministers. Over 600 delegates attended - government ministers, information and communication technology experts, academics, labour representatives and community organisations - from 30 developing countries including 15 African countries¹³, the G7 countries, Australia, Israel and the Russian federation (Miller 1996:2). ISAD and the launch of African Information Society Initiative (AISI) raised the expectations that the conference might "prove to be a watershed in the evolution of a truly

¹² Also called the Twenty-second Meeting of the ECA Conference of Ministers (Hafkin 1999).

¹³ The African countries were: Angola, Botswana, Egypt, Ethiopia, Gabon, Ghana, Kenya, Mauritius, Morocco, Mozambique, Namibia, Senegal, South Africa, Tanzania and Zimbabwe (ECA 1997:2).

'global' information society" (Miller 1996:2).

ISAD was a consequence of Mbeki's suggestion at the 1995 G7 Ministerial Conference on the Information Society to host a follow-up conference because Africa had to become part of the information society and the Internet could

"assist developing countries in leapfrogging stages of development or in going in entirely new directions towards achieving a good standard of living and quality of life. Indeed, the ability to use information effectively is now the single most important factor in deciding the competitiveness of countries" (Mbeki 1996).

The aim of ISAD was to bring together the developing world and the G7 countries to discuss the integration of the developing countries as partners in the global information society and to avoid a widening development gap in the context of the information society. Developing countries were warned that to benefit from the information society they needed to accept neo-liberal policies and globalisation otherwise they "risk being marginalised in the global economy and suffering severe competitive 'disadvantage' for their goods and services" (ISAD 1996:6).

The Executive Secretary of ECA and the Under-Secretary General of the UN, Kinsley Y. Amoako, said that it was necessary to "ensure that access to the information society and its benefits are equitable - across regions and gender, between cities and rural areas, - and that its arrival does not mean the creation of new elites, of new inequities built around information as a resource" (Amoako 1996:4).

There was already a widening technology gap between the developing and the developed countries. Between and within developing countries there were differences in relation to access to the Internet. Some countries were excluded while in other countries there was

uneven development with a growing divide between those included as participants in the information society and those excluded (ISAD 1996:3).

The information society had a number of potential benefits that would lead to an improved quality of life. These benefits include new "knowledge-intensive sectors" in multi-media or software products and services that provide high-paying jobs (ISAD 1996:4). Although there was the danger that the information society would increase unemployment because of a lack of skills (ISAD 1996:5). Information and communications technology support could be given by the Centres of Excellence, Expertise and Resources - the African Advanced Level Telecommunications Institute (AFRALTI) in Nairobi and the École Supérieure Multinationale des Télécommunications (ESMT) in Dakar (ITU 1996:19-20; Miller 1996:7).

However the reality is that the majority of jobs in services are low-paying and only a minority of jobs in information and communications technologies are high-paying. Therefore a tiny number of high-paying jobs would be created unlike what was suggested at ISAD. These jobs usually require workers with existing specialist technology skills. Moreover the limited opportunity for a few high-paying jobs excludes the majority of people in Africa who are illiterate or have low education levels with little opportunity for acquiring information and communication skills.

Other benefits of the information society were: human resource development, economic reforms, economic growth, access to new markets, increased labour productivity, enhanced decision-making, improved public service delivery, greater access to public information, increased cooperation between the public and private sectors, changes in migration from rural to urban areas for jobs, improved health care, increased environmental protection, and early

warning systems for natural disasters (ISAD 1996:6).

Access to information was a basic right and for this to be met universal access including accessibility and appropriate costs was essential. Unless there was universal access and an enabling environment people would be excluded from these benefits. The consequence would be the emergence of "two 'information-classes' of citizens... a two-tiered society, where only one group of the population has access to new networks, services, and equipment" and the danger was that majority of people in Africa would be excluded (ISAD 1996:7, 10).

The conference consisted of ministerial meetings, theme-specific forums and an exhibition on information and communications technology. The objective of the ministerial meetings was in the context of the "new techno-economic paradigm" of the information society to work out agreed policies and programmes for building a global information society (ISAD 1996:2).

Two parallel forums, the Business Forum and the Civil Society Forum, preceded the conference to give input to the Ministerial meetings. The Civil Society Forum was concerned with the two "information-classes", the gap between the haves and the have-nots, labour and the global information society, and the developing two-tier society (Miller 1996:2,4).

Six specialist forums, two each on three separate themes and sub-themes, took place. The first theme covered infrastructure including regulatory frameworks and bodies, universal service, inter-connection and inter-operability of networks to ensure the provision of basic services especially in rural areas. The second theme covered different applications such as radio, satellite and higher bandwidth. The Internet and the information society needed to be promoted by the government but should be funded by business. Questions of privacy, security

and intellectual property right needed consideration. The third theme covered education, labour, culture, language, and the promotion of the existence of the information society to gain public support to ensure universal access. The objective of the six forums was to define procedures for practical outcomes such as policies or joint projects (ISAD 1996:15-21).

Amoako warned the conference that Africa must act with a clear vision,

"If we are clear, if we have a compelling vision for ourselves, then it is likely that our choices will turn into our own reality. If we are not clear, then we will either be perpetual observers of the information highway or find ourselves on a road not fit for our needs" (Amoako 1996).

This was a timely warning as there was no common vision from the conference despite tabling formal joint agreements. The review of the conference by the National Information and Technology Forum (NITF) reported that there was dissension between the developed and developing countries. There were disagreements and rumours of possible walk-outs over the acceptance of the G7 principles, the Developing World Set of Principles for the GIS based on the G7 principles, the differing visions of the developing and developed world in the business forum, and the content and status of pilot projects (NITF 1996a:6-7).

On these differences Charley Lewis, Head of the Congress of South Africa's Trade Unions (COSATU) information and communications technology (ICT) division, said that if the developed countries accepted the G7 principles their agreement would "turn the rest of the world into mere markets for G7 content and applications". Instead he said that the emphasis should be on social and developmental issues which were in the interests of communities (Lewis 1997).

The document, titled, Chairperson's Views Concerning Ideas Emerging from the Forums

Discussions, was not formally endorsed despite widespread support from developing countries. This was because the G7 criticised the themes and possible projects which presumed automatic funding from the developed world (NITF 1996a:6).

The chairperson concluded that ISAD had achieved its three primary objectives of: launching a dialogue between the developed and developing world and within the developing world; initiating the process of defining a shared vision for the global information society; and moving towards "Common Principles" and "Collaborative Actions" (Miller 1996:15). But in the NITF review only continuing a dialogue between the developed and developing countries was agreed and the vision of an equitable information society which benefits the developing world was not shared (NITF 1996a:6).

The review included constructive criticism on the South African delegation. The delegation was criticised for being unrepresentative and lacking clarity resulting in confusion. This was because the South African delegation was made up of three government departments - the Posts, Telecommunications and Broadcasting Department, the Arts, Culture, Science and Technology Department, and Foreign Affairs Department. Each department had a different view. Although there was a draft South African Position Paper there was little preparation with the result that incomplete and different positions were given. As a result South Africa lost any opportunity to play a leading role at ISAD (NITF 1996a:6-7).

1.6 African Information Society Initiative (AISI)

Since its launch at ISAD the African Information Society Initiative (AISI): An action framework to build Africa's information and communication infrastructure has provided a vision, framework, strategy and action plan to build the African information society. The

fundamental aims were to ensure that: information reached all levels of society and flows between Africa and the rest of the world; that the Internet was used to promote development; women must be empowered through the Internet; and that national information and communication infrastructure (NICI) were the main focus. AISI was a guide to identify priority programmes and projects for an information society in Africa around regional collaborative goals (Bounemra et al 1999:337).

The decreasing costs of information and communications technology enabled Africa to be part of the information society by "leapfrogging" stages of development.

"By the year 2010 the aim is... Every man and woman, school child, village, government office and business can access information and knowledge resources through computers and telecommunications" (ECA 1996b:12).

The aim was to achieve a "sustainable information society" with every citizen and village, the "grass-roots society", having access to the Internet and relevant information (ECA 1996b:10-11).

The document raised the question of Africa's social and economic development through the information society and the use of the Internet. Three principal aims for social and economic development were given: improving the standard of living for the whole population; regional economic integration; and improved trade both regionally and globally (ECA 1996b:9).

Development would be stimulated through access to information that was regarded as a "crucial economic and social resource" and through the use of the Internet. Although the majority of Africa's population was illiterate and direct use of the Internet might not be immediately possible the benefits could be felt indirectly through their application, such as tele-medicine (ECA 1996b:6).

The benefits from participation in the Internet and information society were the following. There would be equitable access to research and educational resources via networks and tele-education; linking together of health centres and provision of medical and health information using tele-medicine or tele-health; storage and preservation of cultural heritages, museum collections, and manuscripts; government debt management using information systems; increased food security from early warning drought and famine systems; access to market information; and trade information particularly for small, medium and micro enterprises (SMMEs) and e-commerce. The Internet would save on transport costs. The Internet would create the potential for jobs in the rural areas where 70-80 percent of the African population live whilst the majority of jobs are in the urban areas. This would alter the job migration patterns from rural to urban areas. Finally improving women's access to the Internet would assist the organisation and promotion of gender equality (ECA 1996b:9, 18-24).

An action framework was outlined to build Africa's information and communication infrastructure, called an "infostructure"¹⁴. The infostructure included both the physical structure and the content from global to indigenous knowledge (ECA 1996:39). National Information and Communication Infrastructure (NICI) would be the basis of building this information infrastructure in every African country. NICI must be driven by social and economic development (for example, food security, health, education, unemployment and job creation). Through regional and inter-regional cooperation experiences could be shared and the sharing of benefits speeded up. Using NICI there would be seamless connectivity nationally and globally (ECA 1996b:6, 51-52).

¹⁴ Infostructure was defined as the "building of the information resources" in the AISI document (ECA 1996b:34).

Based on Resolution 812(XXXI) the setting up of an African Technical Advisory Committee (ATAC) was agreed. It would act as a consultative mechanism giving guidance and recommendations on policy to the ECA Conference of Economic Planning and Development Ministers (AISI 1996b:21-22).

The Partnership for Information and Communication Technologies in Africa (PICTA) was formed in 1997 in Rabat, Morocco, to drive the African Information Society Initiative (AISI). PICTA is an informal group of donors and organisations (ITU, UNESCO, IDRC) and builds on the African Networking Initiative (ANI) and the African Internet Forum (AIF) composed of the UNDP, World Bank and the United States Agency for International Development (USAID). PICTA is a forum for exchanging Internet ideas and information around collaborative projects (PICTA 1997; PICTA 1999; Wild & Sibthorpe 1999:3).

The United Nations Development Programme (UNDP) Sustainable Development Networking Programme (SDNP) started in 1992. Since 1995 SDNP concentrated on the Internet so as to provide access to information needed for development. SDNP had facilitated the establishment of the African Internet Forum (AIF), a consortium that aimed to develop Internet access throughout the continent as part of the building of a global information infrastructure (AISI 1996a:9; UNDP 1996a:1-2; Lankester & Labelle 1997:2).

AISI was endorsed at a number of African and international meetings. In the same week in May 1996 that the ECA Conference of Ministers adopted the resolution it was endorsed by the African Regional Telecommunication Development Conference (AF-RTDC-96) in Abidjan, Côte d'Ivoire. The Internet was said to be the key to improve the quality of life in

Africa. Therefore the conference recommended that governments recognise "the critical importance of telecommunication networks for the exchange of multimedia information and to facilitate and promote the development of electronic communications and networks such as the Internet" (ITU/BDT 1996).

In July 1996 AISI was endorsed by the Organisation of African Unity (OAU) Heads of State in Yaoundé, Cameroon. At the summit it was agreed to establish national awareness programmes on the information society and to link all major public institutions to NICI and the immediate step was to ensure that all countries were linked to the Internet (ECA 1997:3).

From 21-23 October 1996 the Addis Ababa Coordination Meeting on implementation of the African Information Society Initiative was held. The meeting was organised by ECA and 29 partner organisations attended. Participants included government ministers, businesses, international agencies and non-governmental organisations. The aim was to draw up concrete plans to implement partnership plans using the Internet to drive social and economic development in Africa. There was agreement that measures were needed to check on the progress towards an information society. A minimum measure was that in the next two years in every African country there must be the Internet (ECA 1997:3).

In January 1997 ECA included AISI in its programmes. This decision was based on the Thirty-first (or XXXI) session of the ECA Conference of Ministers and the adoption of the document 'Implementation of the African Information Society Initiative' as Resolution 812(XXXI). AISI was the basis for projects around the theme "Harnessing Information for Development"¹⁵

¹⁵ The World Bank's "Information for Development Program (infoDev)" has the objective of assisting developing countries to integrate fully into the information society through the Internet

(ECA 1997:4).

AISI was also endorsed by the G7 in Denver, Colorado in the United States and by the African Ministers of Communication at Telecom '98 in Johannesburg (African Connection 1999d:6).

1.7 Building the African information society with public and private cooperation

Following on, and in support of, the Thirty-second (XXXII) Session¹⁶ of ECA and the Twenty-third meeting of the Conference of Ministers, the Global Information Infrastructure Commission (GIIC) and ECA hosted the symposium called, "Meeting the Challenges of National Information and Communications Infrastructure Planning in Africa with Public and Private Sector Co-operation" in Addis Ababa in May 1997 (Cogburn 1997:2). GIIC supports private profit and privatisation and its aim is to "enhance GII [Global Information Infrastructure] by strengthening the role of the private sector" (GIIC 1996).

The African Information Society Initiative (AISII) had been adopted by ECA in 1996.

Therefore the purpose of the symposium was to develop national visions on policy and national information infrastructure (NII)¹⁷ for the Internet, to share experiences of this process

(Worldbank 1995b). It also has a strategy "Harnessing Information for Development" to eliminate poverty and provide sustainable development through the Internet. The UN System-Wide Special Initiative of Africa (UN-SIA) priority is called "Harnessing Information Technology for Development (HITD)" to build the necessary information infrastructure (AISII 1999; ECA 1996b:viii; Talero & Gaudette 1996:1).

¹⁶ Also referred to as the Twenty-third meeting of the ECA Conference of Ministers (ECA 1997:79).

¹⁷ National information infrastructure (NII) consists of the physical infrastructure, the related policies eg. security, network standards and interoperability, and software companies (NII 1997?).

and to campaign for foreign direct investment (FDI) to build an information infrastructure (Cogburn 1997:2; Getz 1998). Amoako had identified that Africa was "the low spot in the world in attracting FDI" with the flow of FDI to Africa decreasing (Amoako 1997).

The GIIC statement of Addis Ababa stated the importance of the Internet for every society because

"The Information Revolution is a real thing: it is not hype. It is not just for the rich countries... it is not peripheral to development. Information and communication services are as important as other basics of social well-being and civilization" (GIIC 1997:77).

GIIC emphasised five issues at the symposium. First, the information revolution was important for both the developed and the developing countries. Second, the Internet was in fact of greater importance for the developing countries and should be regarded as essential for social and economic development. Third, while the Internet was "imperative" it had to be effective to be of any benefit. Fourth, the African Information Society Initiative (AISII) must be African-led and the ECA's role through the development of national information and communication infrastructure (NICI) was endorsed. Fifth, AISII should be implemented with the cooperation of ECA, the public and private sector, labour organisations, NGOs and community organisations, academics and research organisations (GIIC 1997:77-78).

1.8 Global Knowledge 97 (GK97)

From June 22-25 1997 the controversial Global Knowledge 97 (GK97) Knowledge for Development in the Information Age Conference was held in Toronto, Canada, hosted by the World Bank and the Canadian government (GKP 1997:1). The Global Knowledge Partnership (GKP) resulted from the Global Knowledge 97 Conference. According to the Global Knowledge Partnership "the information revolution can be a positive force for empowering the

world's poor" (GKP 1999). The partnership is an informal one between public, private, not-for-profit organisations and world bodies concerned with knowledge and information as the basis for sustainable and equitable development. The main aim of the Global Knowledge Partnership is to use the Internet for developing opportunities for the world's poor (GKP 1997:1; GKP 1997b; GKP 1999).

Global Knowledge 97 focused on three themes. First, the role of the Internet and knowledge or information in sustainable social and economic development. Second, the sharing of experiences and procedures. Third, the provision of information and knowledge resources to empower the poor and developing countries. From the themes the following issues were identified: empowering the poor and developing countries with information and knowledge; policy and regulatory frameworks for the information society; information infrastructure and capacity building; promoting science and technology in developing countries; public information and good governance; life-long learning and distance education; and public-private sector partnerships (GKP 1997:1).

The Toronto Media Collective protested against this conference because they said that it was dominated by the World Bank and was elitist and exclusive rather than based on local community organisations. Therefore they organised a counter event called "Local knowledge - global wisdom". Local Knowledge 97 (LK97) criticised the World Bank's neo-liberal policies and global agenda for the "free market, privatized communication, and technocratic, surveillance state"¹⁸. Bhausaheb Ubale, former Canadian Human Rights Commissioner, while acknowledging technology could speed up development said that it could entrench an elite

¹⁸ It further criticised the World Bank for trying to secretly draft the Multilateral Agreement on Investment (MAI) which would undermine the sovereignty of the nation state (Hirsch 1997:1-2).

(Hirsch 1997:1-2).

The Second Global Knowledge Conference (GKII) took place in Kuala Lumpur, Malaysia from 7-10 March 2000. The themes were based on the need for the poor and developing countries to have access to information and the Internet for development to take place. Although the digital divide was recognised, it was agreed that only through the Internet that the social and economic gap could be closed and the quality of life improved locally, nationally, regionally and worldwide. However unless there was equitable access to the Internet the information divide would continue to widen (GKP 2000:1-3, 16).

1.9 **Africa Telecom '98**

The Africa Telecom '98 Conference was the next major meeting for the ongoing implementation of an African information society (Miller 1996:21). Africa Telecom '98, the fourth Africa Telecom conference, forum and exhibition was held in May 1998 in Johannesburg and organised by the International Telecommunications Union (ITU). The ITU Deputy Secretary-General, Henry Chasia, pointed out, "Africa is the largest and last great untapped market for telecommunications infrastructure, products and services" (Chasia 1998:2). Globally the telecommunications industry was worth \$600 billion (Huge 1998).

From the preparatory workshop of Africa Telecom '98 originated the African Ministers of Communications' report titled, The African Connection, which was a guide for Africa's entry into the information society. As part of the African Information Society Initiative (AISII) it outlines projects for building Africa's information infrastructure through telecommunications and the Internet (African Connection 1999d:6).

The repeated call for the neo-liberal policies of privatisation, liberalisation and deregulation of the telecommunications sector to solve Africa's telecommunication problems was the "mantra" of Africa Telecom '98 (Chalmers 1998). Although couched in language that seems detached from these neo-liberal processes, the call for partnerships with business by Nelson Mandela, former President of South Africa, was part of the "mantra".

"Let us lay the basis for a partnership to take Africa into the Information Society of the 21st century: a partnership that should help turn millions of Africa's illiterate children into engineers, doctors, scientists and teachers; a partnership that should make access to basic health services through communications technology a reality for every African; a partnership that should give millions of Africans working the land access to global markets; in short a partnership that should help fuel the African Renaissance" (Mandela 1998:1).

The theme of Africa Telecom '98 was "The African Renaissance - a Spectrum of Opportunity". The African Renaissance was only possible if there was social and economic development in Africa. In addition there was a new type of poverty which the ITU called "information poverty" which was a consequence of the Internet widening the gap between the developed and developing countries (Africa Telecom 98 1998a:11). Therefore for development to take place it was essential to develop the Internet in Africa which required adequate telecommunications. Only then might it be possible to change the situation that Africa has the largest number of least developed countries (LDCs) in the world - out of the world's 48 least developed countries 33 countries were in Africa (Africa Telecom 98 1998a:3).

Mbeki explained the African Renaissance by quoting lines in Afrikaans from a play by Dirk Opperman, "*Maak die honde los. Daar's ^{goeters} goedes in die bos*" which he translated as, "*Let the dogs off the leash, there are things in the bush*". Imagery which he explained as the,

"barbaric and threatening bush of African flora and fauna, with the black hordes as part of that fauna, against which inter alia, ferocious dogs must be kept on the leash, until such time as necessity demands that they must

be let loose, to repulse the inevitable advance of the primitive things of the African bush" (Mbeki 1998:1).

This deliberately enforced primitiveness, or underdevelopment and exclusion of Africa must be ended permanently through the African Renaissance. Then

"none will be excluded from the forward advance that we all define as progress...there will be no need to breed and keep ferocious dogs, to hold at bay those who are denied access to what a significant part of humanity accepts as a good and necessary part of the ordinary sustenance of the human condition" (Mbeki 1998:2).

To achieve the African Renaissance the "telecommunications sector can and must stand at the cutting edge of this exciting and historic process of the rebirth of Africa" (Mbeki 1998:4).

Mbeki argued against the criticism of public spending on supplying a peasant or shepherd with telecommunications and the Internet instead of basic education or health. He said that to meet the health needs of a peasant it was precisely a modern telecommunications infrastructure that would provide better health in rural areas for the peasant. Through the use of tele-medicine, rural clinics or hospitals could be linked to specialists in cities. Similar use of the Internet could apply to education (Mbeki 1998:2).

On the one hand the Internet and telecommunications were able to "reduce the gap between the 'information and technology rich' and the 'information and technology poor'. On the other hand if Africa did not become part of the information society the Internet "will widen this gap with the effect of creating the widest gap in history between the 'haves' and the 'have-nots' - a gap which will later be almost impossible to narrow, let alone close" (African Connection 1998:10; Africa Telecom 98 1998a:10).

Therefore to even out or close this gap universal service and access was essential¹⁹.

Telecommunications and the Internet needed to be provided for all at an affordable price and of acceptable quality if there was to be development or the realisation of the African Renaissance (Africa Telecom 98 1998d:6; Africa Telecom 98 1998c:4). Although in urban areas there were more telephones, there was unequal access with the poor discriminated against. However as the majority of people in Africa lived in the rural areas a priority was to provide telecommunications to these areas. Unless telecommunications and the Internet were provided to the rural areas Africa would not develop and there would be no African Renaissance (Africa Telecom '98 1998f:3; Africa Telecom 98 1998a:3).

The African Connection report included a special programme for the least developed countries and rural telecommunications. Universal access was needed to underpin the policies, regulatory framework and sector restructuring such as privatisation. Technical assistance was urgently needed and African centres of excellence²⁰ could provide expert assistance and training. Priority projects needed to be identified which were linked to the urban and rural poor, for example, Internet access, telecentres, tele-agriculture, tele-medicine, tele-health and tele-education (African Connection 1999a:2-10; African Connection 1999d:4; Africa Telecom 98 1998e:1; South Africa 1999). In August 1998 the 44 member-states of the Pan-African

¹⁹ At the opening speech of the conference Mandela said that, "We have to say that our collective vision is in danger of failing where it counts most, namely the goal of universal access to basic telecommunications services. We have to acknowledge that the targets set by developing countries to bring all humanity within easy reach of a telephone will not be achieved on our continent as the new millennium dawns" (Mandela 1998:1)

²⁰ Acacia, the ITU/BDT, the Canadian International Development Agency (CIDA) together with international telecommunication companies intend to develop AFRALTI and ESMT to serve sub-Saharan Africa. Training and education in policies, programmes and technical matters would be given as well as resources (Empowerment 1999).

Telecommunications Union (PATU) became signatories to The African Connection report and adopted it as a plan of action for the next five years (African Connection 1999a:1).

1.10 Global Connectivity for Africa Conference

The Global Connectivity for Africa conference was organised by ECA, the World Bank, InfoDev, the African Development Bank, ITU and the Netherlands government from 2-4 June 1998 in Addis Ababa. The purpose of the conference was to further the African Information Society Initiative (AISII) by overcoming the problems of telecommunications, implementing the Internet, and the policy and regulatory frameworks needed. The conference was aimed at policy makers, regulators and operators, connectivity project operators, representatives of user groups including business, rural communities, promoters of information and communications technology, international organisations and donors (ECA 1998).

Although the conference focused on "connectivity" Amoako, UN Under-Secretary General and Executive Secretary of ECA, said "we are not simply here to hook people up. We are here to see how we can use information technology to help bring about better living conditions for Africans" (Amoako 1998:1). Africa had very poor telecommunications and this impeded trade and communications in a highly competitive globalised world. However new technologies could provide services reliably and cheaply throughout Africa and decrease Africa's isolation but this was only possible if there was government support (ECA 1998).

The neo-liberal policies of privatisation and liberalisation of telecommunications were promoted. However while the World Bank was driving these neo-liberal policies their position on financing developments was hesitant, "we won't be part of the financing unless we're absolutely needed" (Bond 1998:3). According to the World Bank Director Energy, Mining

and Telecommunications, James Bond, because of globalisation and the role of the Internet being "plugged-in' [to the Internet] is essential to economic competitiveness, and connectivity is one of the most potent ways to reduce isolation and exclusion of the poor" (Bond 1998:1). He said that there was a direct correlation between the 3 billion people who lived on less than \$2 a day and the 75 percent of people who had no access to telephones (Bond 1998:1).

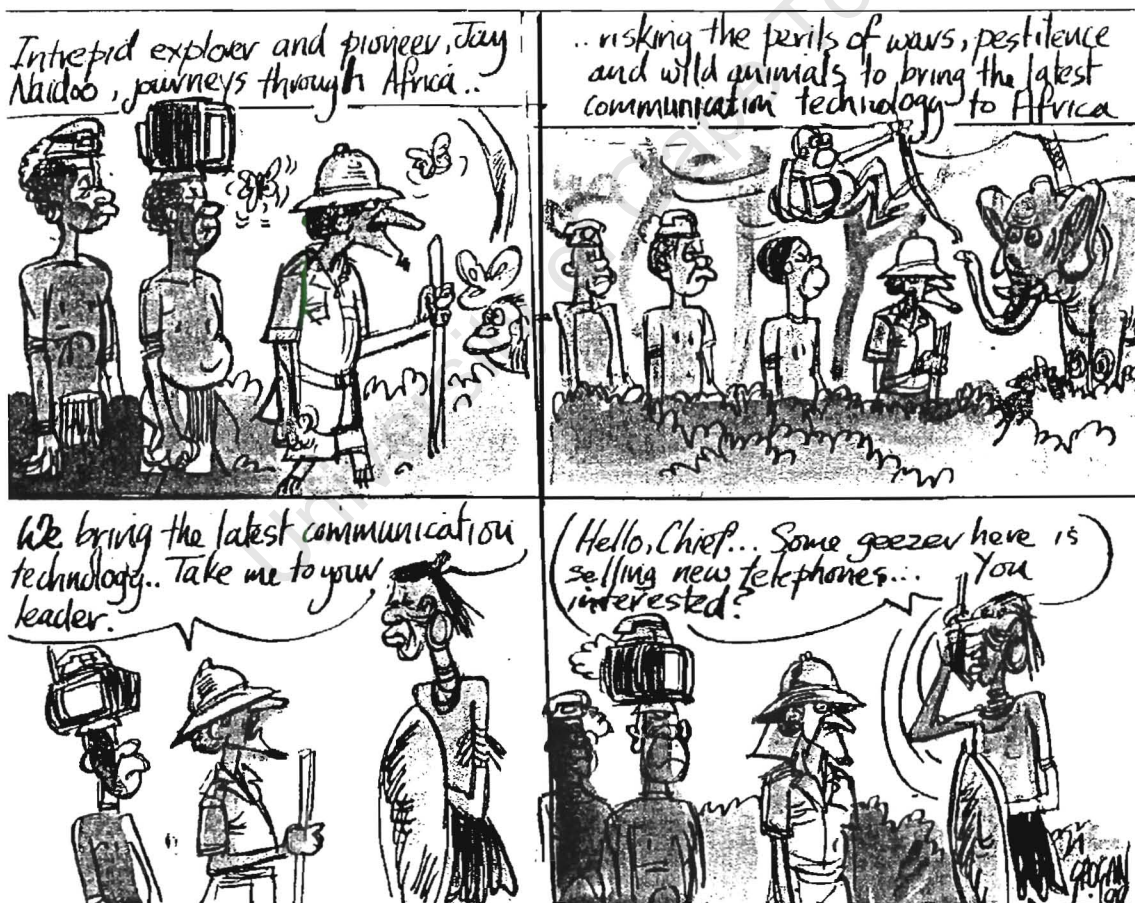
The African Communications Ministers outlined a plan aimed at making available 50 million lines within the next five years as part of AISI. For this to be possible regional cooperation was needed between the richer and the poorer African countries. Countries identified by InfoDev to be regional hubs for information and communication technologies including satellites and landing points for undersea cables²¹ are Egypt, Nigeria and South Africa (ECA 1998). The major challenge for Africa was to ensure that the poor had access to telecommunications and that implementation of an information infrastructure would not exclude the poor (Bond 1998:2).

Africa's first conference on satellite technology was held in November in Johannesburg. At the conference was discussed a \$1.2 billion plan for a satellite system designed only for African countries under the Regional African Satellite communications organisation (RASCOM). RASCOM started in 1992 and has 43 signatory nations and the backing of telecommunications sectors. The aim was to set up 500,000 solar-powered telephone booths from which people could make satellite calls to cut the average rural travelling distance to a telephone from 50 to 5 kilometres (Stones 1998).

²¹ Sub-marine cable projects include Africa One, SAT3/WASC, Sea-Me-Wea and FLAG to provide connectivity around Africa. South Africa would play a prominent role linking Southern Africa to Europe and Asia (Africa One 1999:6; ECA 1998f:9).

1.11 African Connection Rally

The African Connection Rally was an attempt to turn The African Connection report into a reality. The African Connection Rally began on the 30th March 1999 led by Jay Naidoo, the then Minister of Posts and Telecommunications. The aim was to promote telecommunications and the Internet throughout Africa. During the rally 11 countries were visited - Tunisia, Libya, Egypt, Sudan, Ethiopia, Kenya, Tanzania, Malawi, Zambia, Zimbabwe, and South Africa (Ardé 1999b, Ardé 1999c, Ardé 1999d, Herbert 1999a).



Source: Cape Times 11 March 1999

At the start of the rally Naidoo said that Africa's problems could be solved through the Internet, the "information super-highway".

"Cecil Rhodes wanted to build a railroad from Cape Town to Cairo in order to subjugate the continent. Now we want to build an information super-highway from Cape to Cairo which will liberate the continent" (Naidoo 1999a)²².

What was the African Connection Rally about? In one word - telecommunications. In sub-Saharan Africa the average wait for a telephone was 5.4 years for delivery and in over ten countries it took over a decade. Africa had less than half the number of telephones per capita than other developing countries. In sub-Saharan Africa on average there was only 1 telephone per 200 people. South Africa had the highest average of 10.05 telephones per 100 people although this was skewed in favour of urban areas and past apartheid privileged provision for whites. In contrast the Democratic Republic of Congo and Chad had less than 1 phone for every 1,000 citizens (Herbert 1999a; Panos 1998b:6).

Naidoo said that the African Connection Rally was,

"a rallying call for Africa. We want to see a change to greater democracy, and telecommunications is a prerequisite of democracy, no longer merely a consequence of it. Wealth creation in the new world economy is about the Internet. And the African Renaissance requires understanding of culture and backgrounds. If we want to deliver better education and health, we use technology. It's not a luxury, it's a necessity" (Ardé 1999a).

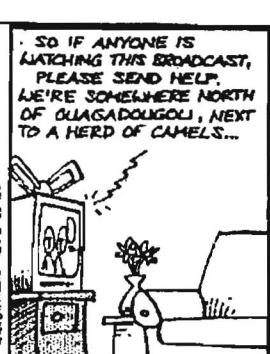
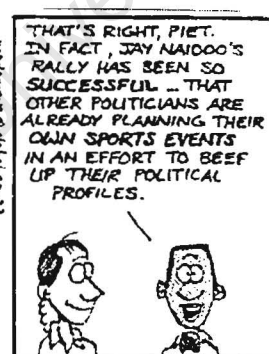
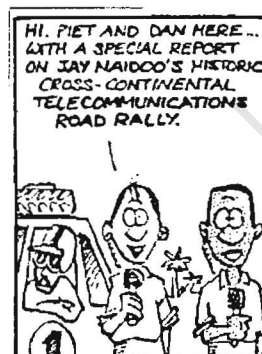
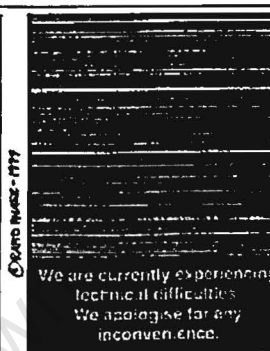
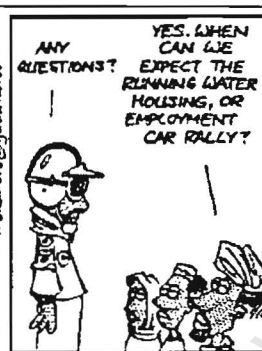
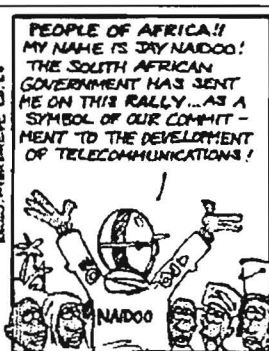
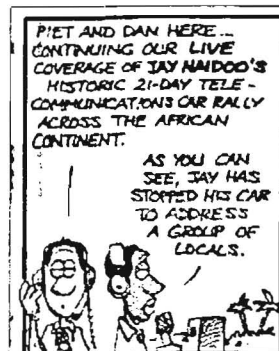
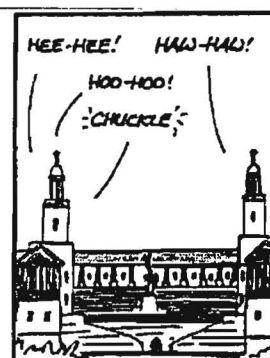
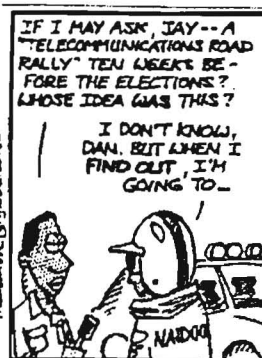
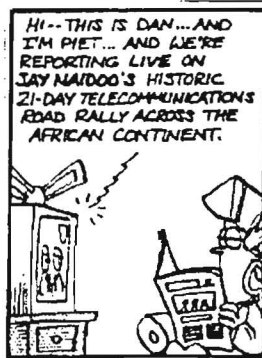
In line with globalisation and neo-liberal policies, what Naidoo called the "new world economy", Africa was opening up its telecommunications industry to privatisation,

²² "In the bus trailing the rally, journalists kept themselves entertained with hilarious imitations of Naidoo and his oft-repeated speech about the importance of laying an information superhighway in the sky" (Ardé 1999b).

liberalisation and deregulation (Herbert 1999b, Herbert 1999c; Rantao 1999). If there is a profit to be made companies will invest. As Mabothe from Siemens, who sponsored the African Connection Rally, said, "wherever there is a chance to put infrastructure in, we see it as a good business opportunity" (Ardé 1999d).

During the African Connection Rally, African government officials were met.

Telecommunications projects were visited. And the need was raised for telecommunications in Africa, for an information infrastructure backbone, the Internet, to be built to ensure that Africa would not be left out of the information society (Ardé 1999a; Herbert 1999b).



In promoting the African Renaissance and an understanding of other African countries, the rally attempted to change the growing xenophobic and racist perceptions of South Africans towards the rest of Africa (Ardé 1999a; Herbert 1999a). The importance of this aspect of the rally is shown by the findings of a survey by the Southern African Migration Studies. The survey found that 25 percent of South Africans want a total ban on immigration and 45 percent support strict limits on the number of immigrants allowed. This was the highest level of opposition to immigration worldwide (Mattes 1999:1-2).

Criticisms of the rally were that it only linked government and business ignoring non-governmental initiatives²³. That the "jaunt" was a publicity stunt, a "crafty pre-election road show", or to fulfil a personal dream²⁴. And that Naidoo's time could be better spent in South Africa ensuring delivery of telephones²⁵.

In each country visited the aim was to establish a telecentre to help provide universal access and ensure that "the basic human right to communication will no longer be denied" (African Connection Rally advertisements in the Cape Times March 19, 1999 and The Sunday Independent March 21, 1999). In South Africa the Universal Service Agency was promoting telecentres with the aim that people would have access to a telecentre within 30 minutes travelling time and that they be used to empower women (USA 1998b:1-3).

²³ According to Anriette Esterhuysen, director of Sangonet, the South African NGO network, the focus was on "private sector and government partnerships, and not those from within civil society... it has not fully utilised the opportunity to interact with grassroots and national projects" (Banfield 1999).

²⁴ The Cape Times editor, Ryland Fisher, suggested "raising awareness of the need for improved communications in Africa was ostensibly the reason for the trip, though in essence it was a clever public relations exercise, both for South Africa generally and Naidoo politically" (Fisher 1999)

²⁵ 'Now get phones connected at home, Jay Naidoo' letter in the Cape Times, April 28, 1999.

When the African Connection Rally ended in South Africa, at the University of the North Naidoo demonstrated the potential benefits of tele-medicine. Johanna Mathye, from the Ga-Mashashane village, who was at the demonstration interestingly not only identified the medical aspects of tele-medicine but also that the Internet was a means of solving transport and distance problems because the sick remained with their families. This was beneficial for both the sick and their families and would improve the quality of their lives because it removed the fear that if you were ill and sent away to hospital the sick person and the families would never be reunited, it was "considered a death sentence". In this sense alone the Internet was playing a beneficial and healing role.

"In the past, very sick or old people were sent far away to the big city hospitals and their families often never saw them again. It was often considered a death sentence when you were referred to those hospitals. People like us cannot afford to travel so far to visit the sick and so people just assumed they would never see you again. Both the sick and the healthy suffered" (Makgotho 1999).

1.12 **Committee on Development Information (CODI)**

ECA convened the first meeting of the Committee on Development Information (CODI) in Addis Ababa, Ethiopia from 28 June to 2 July 1999. The theme was "Developing national information and communications infrastructure (NICI) policies, plans and strategies: the 'why' and 'how'". This took forward the objective of an African Information Society Initiative (AISII) to establish national information and communication infrastructures (NICI) (ECA 1999a:1). At this meeting national information infrastructure (NII) and global information infrastructure (GII) were defined as the "technologies, organisations, and capabilities that facilitate the production and use of ICTs [information and communication technologies]" (ECA 1999a:1).

The Internet drives globalisation. Therefore for developing countries the implementation of

national information and communications infrastructure to provide Internet access was increasingly important. National information policies (NIPs) were required which were based on Internet provision and the need for social and economic development. Areas which would benefit were agriculture, education, environment, public administration, tourism, health, governance and democratic participation (ECA 1999a:3-4).

1.13 African Development Forum '99

ECA convened the first African Development Forum from 24-28 October 1999 with the theme "The Challenge to Africa of globalization and the information age". The African Development Forum emerged as a result of the conviction that social and economic development must be African-led for development to be sustainable ie. development must be "African-owned" and "African-driven" to succeed. Nearly 1,000 participants from governments, business, civil society and international agencies attended the forum to plan the future direction of the African Information Society Initiative (AISII) (ADF 1999).

The theme paper titled Globalization and the information economy: challenges and opportunities for Africa emphasised that for Africa to become part of the information society was "daunting". A person living in a high-income country was four times more likely to have access to a television than a person from a low-income country but 8,000 times more likely to have a computer with Internet access according to figures quoted from the ITU (ADF 1999a:10). A major problem in Africa was the lack of telecommunications. But with new technologies it was possible to "leapfrog" stages of development. Using national information and communication infrastructure (NICI) policies and plans a people-centred African information society might be achieved (ADF 1999c:2)

1.14 **Southern African Development Community (SADC)**

The 1999 Southern African Development Community (SADC) theme document titled SADC in the next millennium emphasised the importance of the Internet for development. It claims that through the Internet poverty could be eradicated. Therefore the SADC region must proactively implement the Internet to build an information society in Southern Africa or be excluded from development (SADC 1999:1).

The following objectives were identified: to develop a Southern African information society and a SADC wide infrastructure, to have equitable access to information and communications technology, to reduce Internet costs, to encourage the growth of software and hardware development in SADC, and to improve human resources (SADC 1999:1-4).

1.15 **2000: the digital divide**

In June 2000 following on the Nordic-South Africa Summit Mbeki secured the inclusion in the Skagen Declaration of the need for the development of technology and telecommunications in Africa. The declaration recognised that "Africa must have its share of the IT revolution in order to avoid a further widening of the digital divide" and "the need to actively support Africa's participation in the New World Economy". It continued: "South Africa and the Nordic countries agree to make IT a major part of their future development co-operation and work together to place this question high on the international agenda" (Jacobson 2000; Malala 2000).

At the World Economic Forum (WEF) in June 2000 Mbeki got agreement to set up an advisory council to address the digital divide. Since then he has started to set up an international information technology council which would be the responsibility of the

Department of Communications and the Department of Trade and Industry to help Africa bridge the digital divide. The council would be similar to the one established with international business leaders to increase foreign investment, although the emphasis will be on international Internet companies.

In July 2000 Mbeki met Manuel Castells. Although hesitant to propose solutions for Africa, Castells, said that,

“You have to leapfrog into the information age. If you don’t, you’ll slip further back. The reality is that Africa is an unstable environment, with very little interest from capital. Even South Africa is only a little trickle of investment. A maximal programme of investment in new information and communication infrastructure and human resources has to happen” (Marais 2000).

What was therefore needed, Castells suggested, was a technological “Marshall Plan” for Africa because the Internet is a “prerequisite for social and economic development in our world. It is the functional equivalent of electricity in the industrial era” (Ensor 2000). This huge not for profit technological public works programme must be financed by governments in the developed countries, international agencies and business (Ensor 2000). The Marshall Plan would in the short-term provide millions of semi-skilled jobs to build the infrastructure. Over the longer term as the economy is restructured around the Internet and education around the knowledge economy, the information society or new economy will be found in an increasingly “wired” Africa. Otherwise Africa’s exclusion will be permanent and it will be “deleted” from the information society (Marais 2000).

From July 5-7th in New York the UN Economic and Social Council (ECOSOC) held a high-

level segment of the “2000 Substantive Session on ICTs for Development”. At this meeting Castells presented his technological Marshall Plan (Marais 2000). The Ministerial Declaration called on all members to bridge the digital divide and to promote digital opportunity because of a “deep concern that the potential of information and communication technology for advancing development, particularly in developing countries, had not been fully captured” (ECOSOC 2000). Therefore what was needed was: cooperation and supporting programmes, new financial initiatives, reducing costs of Internet access in developing countries, and training (ECOSOC 2000).

At the Group of Eight (G8)²⁶ conference 21-23 July in Okinawa Japan a key theme was the role of information and communications technology and similar concerns were expressed of a growing digital divide between the rich and poor countries. A high-level Digital Opportunity Task Force, or Dot Force, was established under the Okinawa Charter on Global Information Society to bridge the digital divide. The Communiqué stated that there is “no time for complacency as globalisation intensifies and the rapid diffusion of information and communications technology brings about fundamental changes to our economies” (At 2000).

At the conference the Task Force from the World Economic Forum’s Global Digital Divide initiative gave advice based on nine principles and ten proposed action plans. A concern that they raised was the use of the terms “Global Digital Divide” because it hides the progress

²⁶ G8 countries include the G7 countries and Russia.

made in liberalisation and privatisation, the increases in provision of telecommunications and the Internet. Therefore they proposed that the terms “Global Digital Opportunity” should be used. However this does not seem to have been taken up by delegates who continued with the more accurate “digital divide”, a term also used in the Okinawa Charter (Drake 2000).

The digital gap between the haves and the have-nots is evident in the statistic that there are nearly 30 PCs for 100 people in the United Kingdom and in Malawi there is 1 computer for 10,000 people (BBC 2000). There was consensus from delegates that “the poor would struggle” in the information society because of a lack of electricity, education and telecommunication but new technology was providing an opportunity to leapfrog infrastructure development in access to telecommunications and the Internet (Brooks 2000). Rasheda Choudhury director of Oxfam’s campaign for popular education in Bangladesh said that, “we appreciate the focus on information technology, on the digital divide [between rich and poor], but are we creating any more quality by providing IT to the regions where there are millions of illiterates, where there is no electricity, no infrastructure?” (Brooks 2000).

The Okinawa Charter on Global Information Society was produced because it was critical to “bridge the international information and knowledge divide”. The Charter states that, “we renew our commitment to the principle of inclusion: everyone, everywhere should be enabled to participate in and no one should be excluded from the benefits of the global information society” (Okinawa 2000:1).

The benefits of the Internet were increased competition, productivity, economic growth and jobs. The development of the Internet was dependent on government and private sector

partnership. Universal and affordable access was needed and poor urban, rural and remote areas must be included. The Internet presented developing countries with a “tremendous opportunity” if they harnessed its potential to leapfrog stages of social and economic development to reduce poverty and provide health, sanitation, education and e-commerce. However lack of electricity, telecommunications and education was a severe barrier to Internet development (Okinawa 2000:4-5).

As mentioned Dot Force was established. The role of Dot Force was to pursue the aims of the Charter by facilitating discussions with developing countries, international agencies and business to promote cooperation and awareness, policy, pilot programmes and projects, increase access and encourage local content, develop skills and training, and e-commerce (Okinawa 2000:5-7). To assist this initiative Japan would give \$15 billion in aid over five years to help train information and communications technology experts (BBC 2000b).

Development Aid campaigners at the conference criticised the G8 for the lack of action on the \$100 billion package of debt relief announced by the G8 a year ago and said the money for the digital divide initiative should rather go into cancelling the debt²⁷ (BBC 2000b; Denyer 2000). A further criticism was the enormous amount that the conference cost “an \$800 million extravaganza for the world’s most powerful men and nothing new for the world’s poor” according to Henry Northover of the Catholic Aid Agency Cafod (BBC 2000b).

2 Conclusion

²⁷ Jubilee 2000 says that 13 children die every minute in the 40 poorest countries as a result of servicing the debt (Leaders 2000). In Tanzania where the average income is less than \$0.60 a day, debt servicing is 34 percent of GDP while only 1 percent is spent on health care (Denyer 2000).

In this chapter the history of significant conferences, events and reports to provide the Internet in Africa was described. All these meetings and events promoted the idea that if the Internet was provided in Africa then social and economic development would occur and Africa would be included in the global economy. Using the Internet, Africa would be able to leapfrog stages of development and reduce poverty through social and economic development.

Generally there was agreement to provide universal access at affordable rates to ensure that there was equitable access to the information society. As most of the population in Africa lives in the rural areas it was agreed that a priority was that telecommunications and the Internet were provided in these areas mainly through telecentres.

Most of the agreements and reports recognised that there was an increasing danger of the widening division between the haves and have-nots. If this happened Africa would be excluded from the global economy and society. In 2000, for the first time in Africa the digital divide was mentioned.

The most comprehensive document on the information society in Africa is the African Information Society Initiative (AISI), 1996. It outlines the perspective that the Internet in Africa would improve the standard of living by providing fast-based information for development, such as, tele-education, tele-medicine, food security, drought and famine warnings, and provide markets for small and medium enterprises and e-commerce therefore creating jobs. By the year 2010 every person in Africa should have access to the Internet for information and for better opportunities for employment.

In the year 2000 for the first time the digital divide was mentioned in Africa. A technological Marshall Plan was suggested as a possible means to bring Africa into the information society. Dot Force, an international high-level task force, was set up to bridge the digital divide and to prevent exclusion from the benefits of the information society.

In the next chapter more details of telecommunication and Internet connections in Africa will be presented.

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CHAPTER 5

Telecommunications and the Internet - getting connected

This chapter examines the state of telecommunications and the Internet in Africa. The Internet is said to be able to provide social and economic development in Africa to help to alleviate or eliminate poverty. For the Internet to be accessible in Africa an efficient, reliable and affordable telecommunication infrastructure is needed. This chapter investigates whether what telecommunication and Internet provision there is in Africa.

1 Telecommunications

- * The richest 20 percent in the world have 74 percent of all telephone lines, the poorest 20 percent 1.5 percent (UNDP 1998a:2)
- * Seventy-five percent of the world's telephones can be found in 8 developed countries (Panos 1998b:6).
- * Tokyo has more telephones than the whole of sub-Saharan Africa (Africa Telecom 98 1998c:1).
- * Sixty percent of developing countries population live in the rural areas but over 80 percent of telephone lines are in urban areas (Deane 1999).
- * Fifty million people are on the waiting lists for telephones (Africa Telecom 98 1998c:1).
- * In sub-Saharan Africa fewer than 1 in 300 people has a main telephone line (Africa Telecom 98 1998f:1).

Africa has the least developed telecommunication network in the world (ITU 1995:17). Yet telecommunications are essential for participation in the world economy and are "the heart of the information economy" (Mustafa et al 1997:1). They are also considered "essential to cultivating a full-fledged African renaissance" (Tarjanne 1998:15).

There are two forces driving globalisation. The first is technology, in particular the Internet, that relies on telecommunications. The second are the neo-liberal policies of privatisation, deregulation and liberalisation not only of trade¹ but also state-owned monopolies such as telecommunications (One 1998).

Telecommunication development in Africa is affected by wars, poverty, government corruption², and the lack of skilled workers (ECA 1999:6). Further the sector is bureaucratised, inefficient, expensive and non-existent for many urban poor and for people living in the rural areas (Law 1997:13; Stiglitz 1998:3). Although traditionally the majority of people in developing countries lived in the rural areas the trend is towards increased urbanisation. More than 50 percent of the world's population now live in cities. Worldwide the fastest rate of urbanisation is in sub-Saharan Africa (Macfarlane & Daniels 2000).

¹ In countries that liberalised too rapidly liberalisation has been criticised as per capita income dropped and job losses increased as local companies could not compete with foreign companies (Wackernagel 2000). Liberalisation of information and communications technology trade is basically opening up markets for the dominant exporting countries notably the United States, European Union, Japan, Singapore and Korea (WTO 1997).

² There is corruption and bribery for new lines or repairs and the billing of out of order telephones (Panos 1997:15). In Nigeria lines are alternately connected and then cut off for protection money (Wallis 2000).

1.1 Teledensity

There are about 14 million telephone lines installed in Africa for 739 million people. Only 6 African countries have over 80 percent of the continent's telephone lines. Africa has 12 percent of the world's population but only 2 percent of the world's telephone lines (Kennard 1999:3; Phone 2000).

Most telephone lines in Africa are in the urban areas while 70 percent of the population might be rural. Although the number of main lines is growing at 10 percent a year this is mainly in the urban areas. More than 1 million people in Africa are on the waiting list for telephones although this figure would be far higher if telephones were more affordable (Phone 2000).

The telephone density, or teledensity, is the number of telephone lines for 100 people. In Africa teledensity is the lowest in the world. Teledensity of Africa as a whole is 1.7 for 100 people (Law 1997:21; Naidoo 1998). However in sub-Saharan Africa teledensity is less than 1 for 100 people according to Law (1997:14). An even lower figure of less than 1 in 300 was given at Africa Telecom '98 (Africa Telecom 98 1998b:1). Moreover many countries have a teledensity below 0.5 lines for 100 people [see Table 1]³ (Opening 2000). These figures are below the general measurement of basic access to telecommunications that is 1 telephone for every 100 people (UNDP 1999:62).

³ African countries that have fewer than 0.5 lines for every 100 people are: Burkina Faso, Burundi, Central African Republic, Chad, Democratic Republic of Congo, Ethiopia, Guinea, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Sierra Leone, Tanzania and Uganda [See Table 1] (ITU 1999).

South Africa had a teledensity of 14 lines for 100 people in 2000 compared with 12.5 lines for 100 people in 1999 (Getting 2000). However this average hides the uneven development in South Africa with urban advantaged areas having more than 50 telephone lines for 100 people compared with the impoverished Eastern Cape with 0.1 telephone lines for 100 people (Access 1997:94).

North Africa has a teledensity of 3.5-4.2 for 100 people, this is higher than West and East African coastal towns that have a teledensity of between 0.25-1.0 for 100 people. However in the Sahel, Mali, Niger and Democratic Republic of Congo the figures are even lower at 0.2 telephone lines for 100 people (Phone 2000).

Even if there are telephone lines, they are often not working therefore these low teledensity figures are misleading and are worse than those given. In Nigeria with a population of 120 million people there are only 700,000 lines. However out of this low figure only 400,000 telephone lines are operational and those who have telephones are the elite (Kubenyinje 1999; Nigeria 2000). There has been a fall in teledensity in the Democratic Republic of Congo, Ghana, Guinea, Liberia, Sierra Leone and Sudan (Africa Telecom 98 1998b:2).

Aggravating this lack of access for the majority of the people in Africa is that there are hardly any public telephones. The few that exist are often not working. There is about one public telephone for every 17,000 people in Africa compared to a world average of one for every 600 people and one for every 200 people in the developed countries (Phone 2000).

Table 1 - Telecommunication Development Sector by country					
Name	Pop. in millions	GDP per capita	Main lines per 100 people	Main lines per 100 households	No. mobile phones per 100 people
United Kingdom	58.95 [1998]	21,878 [1997]	54.16 [1997]	99.1 [1997]	25.2 [1998]
United States	270.37 [1998]	30,173 [1997]	64.37 [1997]	113.5 [1997]	25.6 [1998]
Algeria	30.08 [1998]	1,442 [1995]	5.32 [1998]	n/a	0.1 [1998]
Angola	12.09 [1998]	1,684 [1995]	0.6 [1998]	2.3 [1995]	0.1 [1998]
Benin	5.78 [1998]	374 [1997]	0.66 [1998]	2.4 [1996]	0.1 [1998]
Botswana	1.57 [1998]	3,079 [1998]	0.54 [1997]	2.5 [1996]	0.0 [1997]
British Indian Ocean Territory	n/a	n/a	n/a	n/a	n/a
Burkina Faso	11.31 [1998]	215 [1998]	0.37 [1998]	n/a	0.0 [1998]
Burundi	6.46 [1998]	148 [1997]	0.26 [1997]	0.8 [1997]	0.0 [1997]
Cameroon	14.31 [1998]	617 [1997]	0.54 [1997]	2.5 [1996]	0.0 [1997]
Cape Verde	0.41 [1998]	n/a	9.80 [1998]	30.2 [1996]	0.3 [1998]
Chad	7.27 [1998]	149 [1997]	0.12 [1998]	0.2 [1996]	0.0 [1998]
Comoros	0.66 [1998]	382 [1995]	0.95 [1998]	3.3 [1995]	0.0 [1998]
Congo, Democratic Republic	49.30 [1998]	n/a	0.04 [1997]	0.1 [1995]	0.0 [1997]
Congo, Republic	2.79 [1998]	757 [1998]	0.80 [1997]	n/a	0.0 [1996]
Côte d'Ivoire	14.29 [1998]	745 [1997]	1.19 [1998]	n/a	0.6 [1998]
Djibouti	0.62 [1998]	846 [1996]	1.27 [1998]	4.4 [1996]	0.0 [1998]
Egypt	56.98 [1998]	1,254 [1998]	6.02 [1998]	n/a	0.1 [1998]
Equatorial Guinea	0.43 [1998]	668 [1996]	1.25 [1998]	n/a	0.1 [1998]
Eritrea	3.58 [1998]	161 [1995]	0.68 [1998]	1.8 [1997]	0.0 [1997]
Ethiopia	59.65 [1998]	106 [1998]	0.28 [1998]	0.7 [1996]	0.0 [1997]
Gabon	1.17 [1998]	5,121 [1996]	3.27 [1997]	12.4 [1996]	0.8 [1997]
Gambia	1.23 [1998]	n/a	2.08 [1998]	11.9 [1996]	0.4 [1998]
Ghana	19.16 [1998]	372 [1997]	0.57 [1997]	0.9 [1996]	0.1 [1997]
Guinea	7.71 [1998]	677 [1996]	0.48 [1998]	0.6 [1997]	0.3 [1998]
Guinea-Bissau	1.13 [1998]	8,495 [1995]	0.71 [1998]	3.3 [1995]	0.0 [1998]

Kenya	29.01 [1998]	347 [1997]	0.92 [1997]	0.6 [1996]	0.0 [1997]
Lesotho	2.06 [1998]	547 [1997]	0.97 [1998]	1.8 [1995]	0.5 [1998]
Liberia	2.67 [1998]	n/a	0.22 [1997]	2.0 [1997]	0.0 [1997]
Libya	5.98 [1998]	n/a	6.79 [1996]	40.3 [1996]	0.2 [1997]
Madagascar	16.36 [1998]	224 [1997]	0.27 [1997]	0.6 [1996]	0.0 [1997]
Malawi	10.75 [1998]	157 [1998]	0.35 [1998]	1.2 [1997]	0.1 [1998]
Mali	10.69 [1998]	230 [1997]	0.25 [1998]	0.3 [1995]	0.0 [1998]
Mauritania	2.53 [1998]	455 [1996]	0.53 [1998]	0.3 [1995]	0.0 [1998]
Mauritius	1.15 [1998]	3,656 [1998]	21.21 [1998]	70.4 [1997]	5.3 [1998]
Morocco	27.87 [1998]	1,296 [1998]	5.44 [1998]	22.7 [1997]	0.4 [1998]
Mozambique	18.88 [1998]	86 [1995]	0.40 [1998]	0.8 [1996]	0.0 [1998]
Namibia	1.66 [1998]	2,051 [1996]	6.06 [1998]	16.0 [1995]	1.2 [1998]
Niger	10.08 [1998]	161 [1997]	0.18 [1998]	n/a	0.0 [1998]
Nigeria	106.41 [1998]	1,357 [1997]	0.40 [1996]	n/a	0.0 [1995]
Réunion	n/a	n/a	n/a	n/a	n/a
Rwanda	6.60 [1998]	308 [1998]	0.28 [1996]	n/a	0.0 [1997]
St Helena	n/a	n/a	n/a	n/a	n/a
São Tomé	0.14 [1998]	358 [1995]	2.21 [1998]	5.5 [1995]	0.0 [1998]
Senegal	0.08 [1998]	6,995 [1997]	24.35 [1998]	56.5 [1996]	1.5 [1996]
Seychelles	0.08 [1998]	6,995 [1997]	24.35 [1998]	56.5 [1996]	1.5 [1996]
Sierra Leone	4.57 [1998]	209 [1995]	0.35 [1997]	1.4 [1996]	0.0 [1997]
Somalia	n/a	n/a	n/a	n/a	n/a
South Africa	44.31 [1998]	2,979 [1997]	10.72 [1997]	29.1 [1996]	3.7 [1997]
Sudan	28.29 [1998]	364 [1997]	0.57 [1998]	1.6 [1998]	0.0 [1998]
Swaziland	0.95 [1998]	1,388 [1997]	3.05 [1997]	6.2 [1995]	0.5 [1998]
Tanzania	32.10 [1998]	244 [1997]	0.38 [1998]	1.1 [1998]	0.1 [1998]
Togo	4.4 [1998]	324 [1997]	0.71 [1998]	2.6 [1997]	0.2 [1998]
Tunisia	9.34 [1998]	2,145 [1998]	8.06 [1998]	25.6 [1997]	0.2 [1998]
Uganda	20.55 [1998]	317 [1996]	0.26 [1998]	0.3 [1995]	0.1 [1998]
Zaire	n/a	n/a	n/a	n/a	n/a
Zambia	8.78 [1998]	463 [1997]	0.87 [1998]	2.0 [1997]	0.0 [1997]
Zimbabwe	12.68 [1998]	712 [1996]	1.72 [1997]	4.7 [1996]	0.1 [1997]

n/a=not available Source: ITU 1999

Teledensity in Africa is only one-tenth of that of Asian countries and one-fifteenth of Latin American countries (Law 1999:28). Latin America has 6 percent of the lines and 8 percent of the world's population (Africa Telecom 98 1998b:2). In the Asia Pacific region the teledensity is over 5 for 100 people. Asia Pacific region has more than 60 percent of the world's population but only one-quarter of the telephone lines (Opening 2000).

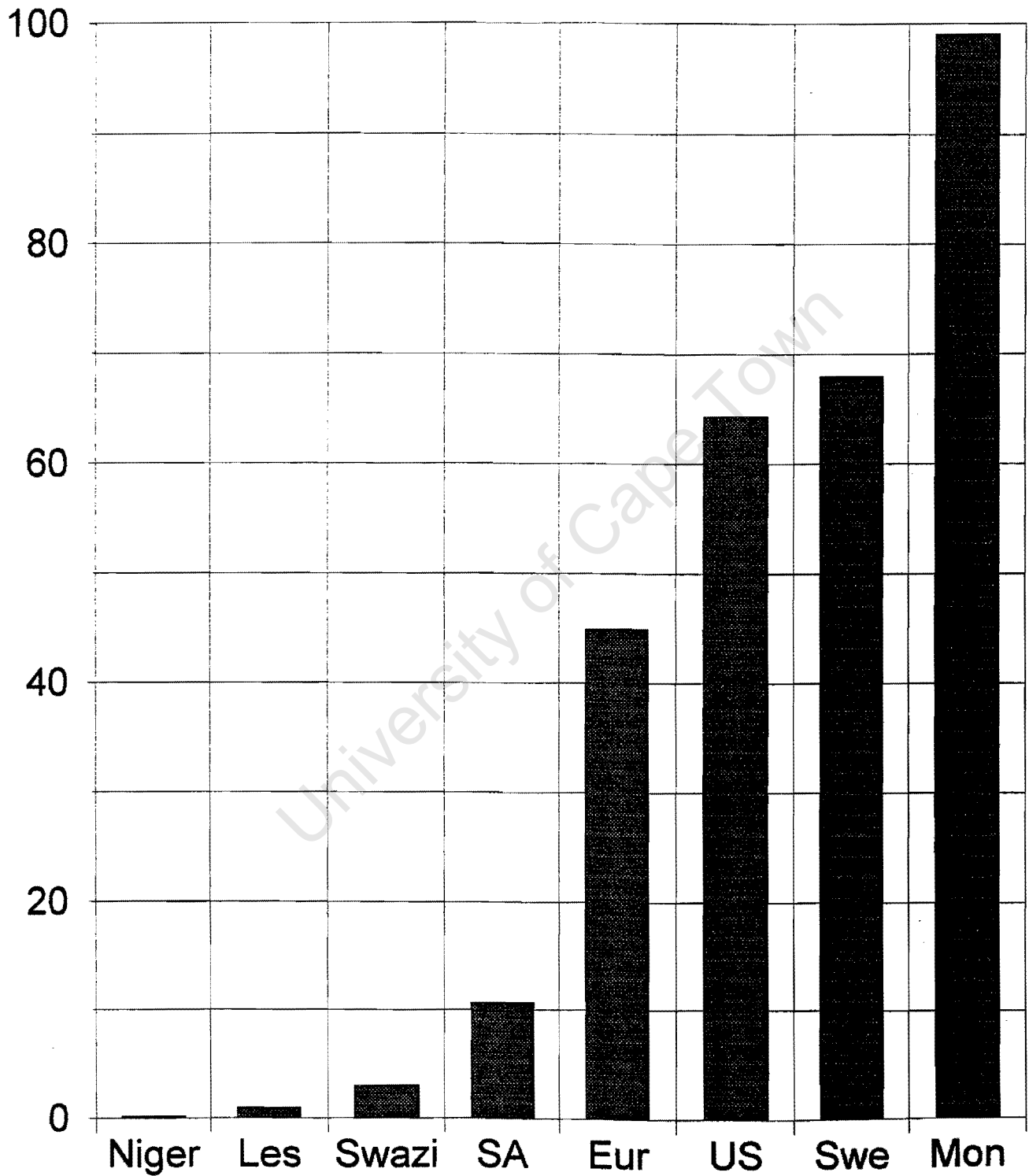
In contrast, the developed countries have only 15 percent of the population but 70 percent of the telephone lines (Opening 2000). The teledensity is 45 for every 100 people in Europe. The United States has over 64.37 telephones for every 100 people [see Table 1] (ITU 1999). Sweden has 68 for every 100 people (Panos 1997:9). The tiny state of Monaco has 99 lines for every 100 people (ITU 1998:3). Comparisons between the number of telephone lines in Monaco [Mon], Sweden [Swe], the United States [US], Europe [Eur], South Africa [SA], Swaziland [Swazi], Lesotho [Les] and Niger are shown in Figure 1.

Although Africa is marginalised or excluded from the world economy paradoxically sub-Saharan Africa's international traffic per subscriber is the highest in the world. This is because almost all international traffic, even between adjacent countries, is via mainly European telecommunication operators and calls are have to paid in foreign exchange at very high rates. The exception is South Africa that also acts to a certain extent as a hub for regional telephone calls (Law 1997:55). International traffic is twice as high as the United States and ten times higher than Japan. But at the same time telephone traffic per person in Africa is the lowest in the world (Africa Telecom 98 1998f:1).

Figure 1

Phone lines

Per 100 People



Another contradiction is that the average rate of pre-tax profitability in sub-Saharan Africa is the highest in the world but the average return per person is the lowest in the world. Further, the cost of installing a telephone line in Africa is the highest in the world as much as \$5,000-6,000. In South Africa connection costs are lower than most of Africa at \$2,000 (R14,000) (Getting 2000). However these costs are high compared with \$800-\$1,500 in other developing countries (Law 1997:11, 14). Installation costs are high because equipment is imported at high foreign exchange rates⁴, inefficiencies and the large areas to be served (Africa Telecom 98 1998f:1). Even though Africa includes most of the world's poorest countries the telephone service and call costs are higher than in developed countries. Moreover despite these high charges there is "universally lousy service, and there is little or no service to the poor or rural areas" because they are considered unprofitable (Stiglitz 1998:3).

However the supply of telephones in Africa does not keep up with the demand. In sub-Saharan Africa there are very long waiting lists with "applicants often having to wait for five years or more"⁵ (Kerf & Smith 1996:2). Yet ITU studies show that each additional telephone line in Africa contributes approximately US\$4,500 a year to GNP⁶ (Mustafa 1997:1; SATCC 1998:20).

Although the statistics for Africa are abysmally low they hide the unevenness of development

⁴ Up to 99 percent of total expenditure of telecommunications projects can be taken up in foreign exchange (Panos 1997:12).

⁵ Waiting lists in Lesotho can be as long as 10-11 years and telephones may never be repaired (Basson 1999). In Zimbabwe waiting lists may take even longer, up to 21 years (Panos 1997:9).

⁶ In China the estimate is that investing \$12 million in telecommunications will increase national income by \$160 million over 10 years (Panos 1997:10).

in each country. Politics, authoritarian government control of information and free speech, and corruption play a key role. In South Africa under apartheid whites were more likely to have telephones and in other African countries it is the elite and government cronies who have telephones (Panos 1997:17; Stiglitz 1998:3). There is the divide between the rich who can afford telephones and the poor who are unable to afford telephones in the urban areas. In Kenya 80 percent of the population do not have a telephone (Panos 1997:9). In the rural areas there are few if any telephones eg. in Burundi, Central African Republic, Chad, Eritrea, Guinea-Bissau and Sierra Leone 80-95 percent of the lines are in the main cities. People may have to travel for days to a telephone. Other problems are that even if there are telephone lines, wars, the rainy season and floods, inefficiencies⁷ including obsolete and incompatible equipment, and the lack of trained workers means the existing lines are seldom operating (Africa Telecom 98 1998b:2).

Because of the inadequacies of main lines, broken connections, faults, the lack of provision of telephones lines, and long waiting lists often for years, more and more people in Africa are subscribing to cellphones. This is in spite of the fact that costs of cellphones and call costs from cellphones are high. However cellphones are considered reliable. They are no longer only for the rich, elite, government officials and expatriates⁸ (Not 2000).

⁷ In Ghana up to 50 percent of working time in small firms is wasted by chasing up orders and goods in person as telephone and fax lines are unreliable (Panos 1997:4).

⁸ In Uganda teledensity is only 0.26 for every 100 people. Lack of telephones has resulted in a rapid expansion of cell phone users. There are only 57,091 fixed lines in Uganda and although cellphones only started in 1996 by 1999 there were already over 57,000 subscribers (Wasswa 1999).

At least 42 African countries have cellular telephone services mostly in the capital cities or secondary towns and not in the rural areas. In 1997 there were an estimated 225,000 cellular subscribers in Africa and 2 million in South Africa (Jensen 1999c). By 1999 the figure in Africa had grown to 5,870,000 subscribers and the annual growth was 101.85 percent (Latest 1999). South Africa had grown to 3.7 million users with 7,000 mostly prepaid users signing up each day. More than 70 percent of the South African population was covered by the cellular networks (Statistics 1999). In 2000 the number of South African cellphone users was estimated as 6 million (Joubert 2000).

Although globally South Africa has the fastest growth of cellphone subscribers, 84 percent of cellular subscribers are in the developed countries (Deane 1999). In 1999 the total number of world cellular subscribers was 376,500,000 and the annual growth was 52.49 percent (Latest 1999). In Japan in 1996 the share of cellphone users doubled. In the Nordic countries there are 10 cellphone subscribers to every fixed line subscriber (Airborne 1998; Simmonds 1999; Walker 1999).

Between 1997-1998 20 new mobile networks were launched in Africa. Up to 20-30 percent of total phone lines in many African countries are cellular. In Rwanda there are more cellphones than fixed landlines at 58 percent because war has destroyed most of the land telecommunications infrastructure. Similarly in Somalia, cellphones are replacing landlines. Côte d'Ivoire has more cellphones than landlines. In Nairobi there is a long waiting list of cellphone customers (Not 2000). However even with the demand for cellphones including in poorer urban areas a cellphone remains a luxury for the majority of people in Africa (Not

2000).

1.2 Privatisation, liberalisation and deregulation

Globally the nature of the telecommunications sector has changed following the neo-liberal policies promoted by the World Bank, IMF, WTO and ITU. There has been a separation of postal and telecommunication services and a move towards the privatisation, liberalisation and deregulation of services. In 1998 the global telecommunications market was liberalised according to the February 1997 WTO agreement⁹ and "everybody realizes now that the deregulation of [global] telecommunications services by January 1, 1998 is necessary" (Bangemann 1997a) because privatisation and liberalisation are "the new rules of globalization" (UNDP 1999:57).

In Africa 15 countries have privatised their state-owned telecommunications sector and a further 8 countries are in the process of privatisation (Opening 2000). Many of these privatisation plans, including those of South Africa, have been influenced by the African Green Paper¹⁰ that is a telecommunications policy document for the whole African continent. The aim of the document was to bring Africa into the information society. Therefore the telecommunications sector needed to be developed because "where information flows so does commerce" (African 1995:53). The document promoted privatisation, deregulation and

⁹ In 1997 69 countries controlling more than 80 percent of the world's telecommunications traffic signed an agreement at the World Trade Organisation (WTO) in Geneva to liberalise domestic telecommunications markets (Panos 1997:5).

¹⁰ In 1990 the African Telecommunication Development Conference (ATDC) in Harare, Zimbabwe, created a standing African Information and Telecommunication Policy Study Group (AITPSG) within the framework of the ITU/BDT. The African Green Paper (ATDC-90/RESI) resulted from this group (African 1995:2).

liberalisation, regional collaboration in African networks and the development of African telecommunications equipment as well as the development of human resources, for example, at AFRALTI and ESMT (African 1995:4-8).

However at the same time that liberalisation is advocated for the developing countries, there is a global trend towards a greater monopolisation and concentration of the telecommunications industry with mergers and acquisitions. The top ten telecommunication companies control 86 percent of the world market (UNDP 1999). These trends are apparent in Europe, the United States and Asia. With the changes in the nature of telecommunications and the difficulties of defining borders with satellite or distinguishing between basic services and value added services there have been a number of consolidations. In 1998 these deals totalled \$100 billion (O'Connor 1998). Worldwide the "info-communication" or telecommunication and information technology industries market that is being liberalised is worth \$1,340 billion a year (Petrazzini & Kelly 1998:29).

On the one hand the lack of telecommunications, the bureaucratic ineptness in providing services and the high costs, seems to necessitate that liberalisation of the state monopoly telecommunications sector is the only solution to providing decent, affordable telecommunications. On the other hand the problem with privatisation, liberalisation, and deregulation is that once this takes place the revenue is lost from the state and state control is weakened while private ownership and control increases. Therefore there is less money for public expenditure on health or education (UNDP 1997b:88). Jobs are lost - in the United Kingdom 100,000 jobs were lost through privatisation (Ruddle 1998?). Dependency on

foreign investment, technology and expertise can increase. The state also loses control over ensuring telecommunications are provided in rural areas and poor urban areas that are not considered profitable (Panos 1997:18-19). Corruption, nepotism, and monopolisation may continue preventing reforms (Opening 2000; Stiglitz 1998:4).

1.3 Universal service and access

Provision of telecommunications and increasingly the Internet to prevent a digital divide, for the majority of people is only possible through universal service and access in both urban and rural areas. Telephones and the Internet in rural areas should not be a luxury and would assist farmers achieve optimum prices, act as an early warning system for natural disasters such as floods etc. Better access to services (health, education and information) would improve the quality of rural life, reduce transport costs and could reduce rural-urban migration (Panos 1997:6; Richardson 2000:1). Although universal service¹¹ refers to all households having a telephone it could be defined as the provision of good quality service at an affordable price (Naidoo 1998).

However universal service in Africa has been criticised as unsustainable because for telecommunication provision to be viable it must be profitable and this excludes rural areas and the poor (Mustafa 1997:33-34). Yet this ignores evidence from Latin America that rural telecommunications can be profitable. Also the Village Phone programme of the Grameen Bank in Bangladesh is profitable. This programme showed that unless women were proactively recruited to run phone shops fewer women would use telephones and there would

¹¹ Figures for universal service in Europe and North America are over 80 percent (USA 1998a:4).

be greater exclusion of women¹². Despite the benefits of telecommunications, non-governmental organisations and developmental agencies are not taking up telecommunications provision as part of social and economic development in the rural areas. These organisations therefore remain urban based where there is access to communications and information (Richardson 2000:2-3).

The term universal access usually refers to a telephone being within a reasonable distance. The difficulty lies in defining "reasonable" (ITU 1998:8). However increasingly universal access includes the Internet and not only basic telecommunications (ITU 1998b:4). For universal service and access to exist the private sector cannot be relied upon and it is the task of government. In South Africa since 1996 the Universal Service Agency has aimed to provide universal access (ie. at most 30 minutes travelling time) to a telephone. Rural and urban community based telecentres¹³ with Internet access could provide universal access. In South Africa it was recommended that training would be provided and that one of the people running the telecentre must be a woman to promote skills and gender equality (USA 1998a:1; USA 1998b:1-7).

¹² Grameen Telecom's Village Phone available:
<http://www.telecomms.com/villagephone>

¹³ Telecentres started in the Scandinavian countries 15 years ago and aimed to bring telecommunications and then the Internet to rural and remote areas (Ernberg 1998?). Also see "Little engines that did": case histories from the global telecentre movement http://www.idrc.ca/acacia/engine/eng_3.htm. and If you have a lemon, make lemonade: a guide to the start-up of the African multipurpose community telecentre pilot projects <http://www.idrc.ca/acacia/outputs/lemonade/lemon.html> Information on telecentres in South Africa may be accessed at:
<http://www.usa.org.za>
<http://www.africanconnection.org>
<http://www.idrc.ca/acacia/outputs/telesite.html#4.1>

However the South African Universal Service Agency has failed to even meet its own target of 255-410 telecentres. This target is low compared with an estimated 15,000 telecentres that are required. Only 28 telecentres have been started although there is an obvious need. The first telecentre was at Ga-Seleka, Northern Province in 1998, where previously people travelled 80 up to kilometres to use a telephone. Top management of these telecentres is now alleged to be corrupt and the telecentres have been outsourced (Allchurch 1998; Eveleth 1999).

Universal access was first raised in the 1984 Maitland report, titled, The Missing Link, produced by the Independent Commission for World-Wide Telecommunications Development. The report said that telecommunications were a necessity, not a luxury nor a result of economic development, but critical for developing the economy and therefore access and equality was essential for the poor countries. However Africa still remains an excluded continent (ITU 1998:2).

Ten years later in March 1994 the report was reviewed and new objectives were set at the World Telecommunication Development Conference (WTDC-94) in Buenos Aires¹⁴. The

¹⁴ At this conference the USA Vice-President Al Gore said that there was a need to build and develop a global information infrastructure (GII) that would bring social and economic development,

"the GII will circle the globe with information superhighways on which all peoples can travel. These highways will allow us to share information, to connect, and to communicate as a global community. From these connections, we will derive robust and sustainable economic progress, strong democracies, better solutions to global and local environmental challenges, improved health care" (Buenos 1999).

Buenos Aires Action Plan (BAAP)¹⁵ for promoting telecommunications and the Internet in developing countries resulted. The conference declaration said that telecommunications "is an essential component of political, economic, social and cultural development. It fuels the global information society and economy" (Buenos 1999). The declaration continued that the gap was widening between developed and developing countries therefore "liberalization, private investment and competition" was needed (Buenos 1999). At the same time universal service including in the rural areas was required (Buenos 1999).

Access to information is a basic right. In April 1997 the UN's Administrative Committee on Coordination (ACC) issued a statement on Universal Access to Basic Communication and Information Services that this right could only be met if there was access to information and communication technology. Further access to the Internet would ensure sustainable development. However a concern was that "the information and technology gap and related inequities between industrialized and developing countries are widening: a new type of poverty - information poverty - looms" (ITU 1998:2).

To assist Africa to "leapfrog" stages of technological development new technologies such as satellites, wireless technology, mobile and cellular phones can be used to provide telecommunications and the Internet (Panos 1997:3). New technology developments have resulted in the convergence of telecommunications, computers, multi-media, and publishing

¹⁵ BAAP Programme 9 promotes development of rural telecommunications including telecentres with Internet access in Benin, Mozambique, Mali, Tanzania and Uganda. Programme 12 supports the development of telematics and computer networks in both urban and rural areas (ITU 1998b:1).

(Bangemann 1997b:2). Using new technologies decreases costs¹⁶ and remote rural areas can be covered (Panos 1997:6).

Although "leapfrog" technology can assist in the development of a better telecommunication infrastructure it does not guarantee high teledensity and improved standards of living. In South Africa 99,9 percent of telecommunication networks are digital and the trend is for Internet protocol-based network to ensure fast bandwidth for accessing large multi-media files. In Botswana and Rwanda 100 percent of the networks are digital but there remains low teledensity and high levels of poverty. In the United States only 49.5 percent of telephones are digital but the teledensity is higher and the standard of living higher¹⁷ (Bandwidth 2000; Jensen 1999d:3).

Some of the continent-wide projects to provide telecommunications and Internet access would help prevent 80 percent of Africa's telecommunications revenue flowing out to overseas operators who currently provide links even between African countries (Unlocking 2000). Fibre optics are cheaper than satellites therefore a 10 minute call from Nairobi to Johannesburg using fibre optic cable costs as little as \$1 whereas by satellite it costs \$100 (Robertson 1999). Africa One aims to put an fibre optic ring around Africa. The South Africa-Far East (SAFE) project aims to link South Africa to Malaysia. This project would link to the South Atlantic Telephony/West African Submarine Cable (SAT-3/WASC) fibre link to Europe, North

¹⁶ The cost of a 3 minute call from New York to London dropped from \$245 in 1930 to 35 cents in 1998 (UNDP 1999a:2).

¹⁷ Although 15 percent of the total population level and 25 percent of children live below the poverty line in the United States (Castells 1999:7).

America and Asia. South Africa would therefore become a hub for African traffic. In North Africa the SEA-ME-WEA fibre cable provides access for Egypt and Djibouti (Africa Telecom 98 1998b:2).

For the developing countries to have telecommunications an estimated \$466 billion needs to be spent. This would increase the teledensity in Africa to 2.6 telephones for every 100 people. For a teledensity of 1 line for 100 people in Africa \$8 billion must be spent. China is planning to spend \$100 billion to achieve a teledensity of 25 lines for 100 people (Panos 1997:9-10). Yet foreign direct investment to Africa has fallen and is only 1.5 percent of the world total therefore there is less possibility of foreign investment providing telecommunications in Africa (Panos 1997:11). The World Bank has given a paltry \$250,000 grant to the Pan African Telecommunications Union (PATU) to assist African countries connect to satellite-based cellphone systems (World Bank 1999).

2 The Internet

- * Ninety-five percent of all computers are in the developed countries (Laullon 1997:3).
- * Ninety-seven percent of Internet host computers are in developed countries (Deane 1999).
- * There are more Internet hosts in Latvia with a population of 2.5 million than the whole of Africa (Jensen 1999d:6).
- * English is used in almost 80 percent of websites although fewer than 1 in 10 people worldwide speak English (UNDP 1999a).

Table 2 - Distribution by Top-Level Domain Name by Host Count - January 2000

Name	Domain	Hosts	All Hosts	Dupl Names	Level 2 Domains	Level 3 Domains
TOTAL		72,398,092	80,838,943	8,440,851	2,032,268	21,862,633
Commercial	com	24,863,331	29,075,185	4,211,854	1,373,615	8,202,003
United Kingdom	uk	1,901,812	2,240,216	338,404	51	53,118
United States	us	1,875,663	2,062,653	186,990	84	3,505
South Africa	za	167,635	241,377	73,742	28	13,044
Egypt	eg	4,640	24,342	19,702	82	256
Botswana	bw	2,226	2,248	22	62	2,083
Zimbabwe	zw	2,073	2118	45	645	378
Namibia	na	2,043	2,193	150	9	108
Morocco	ma	961	1,018	57	7	565
Mauritius	mu	823	824	1	57	803
Swaziland	sz	661	670	97	17	384
Côte D'Ivoire	ci	629	639	10	47	368
Kenya	ke	602	608	6	6	79
Zambia	zm	537	549	12	14	491
São Tomé & Príncipe	st	447	464	17	227	287
Madagascar	mg	337	340	33	126	336
Senegal	sn	306	308	2	18	306
Rwanda	rw	259	259	0	1	1
Tanzania	tz	218	222	4	5	28
Burkina Faso	bf	211	212	1	3	211
St Helena	sh	188	204	16	65	147
Mozambique	mz	162	162	0	11	123
Uganda	ug	139	142	3	7	56
Togo	tg	120	121	11	31	83
Ghana	gh	110	110	0	1	9
British Indian Ocean Territory	io	109	109	0	5	107
Tunisia	tn	96	96	0	13	96
Ethiopia	et	81	81	0	3	3
Nigeria	ng	77	77	0	3	20
Sierra Leone	sl	75	76	1	2	75

Mauritania	mr	59	59	0	11	59
Lesotho	ls	50	50	0	50	30
Djibouti	dj	40	40	0	1	40
Niger	ne	32	32	0	24	28
Benin	bj	27	27	0	2	26
Algeria	dz	26	27	1	5	25
Guinea-Bissau	gw	15	15	0	5	12
Gambia	gm	12	12	0	8	6
Mali	ml	11	11	0	4	4
Congo, Democratic Republic	cd	8	9	1	6	6
Central African Republic	cf	7	7	0	2	7
Angola	ao	6	6	0	2	4
Eritrea	er	6	7	1	4	2
Cameroon	cm	5	5	0	5	3
Chad	td	5	5	0	2	4
Congo, Republic	cg	3	3	0	3	1
Gabon	ga	2	2	0	2	2
Seychelles	sc	2	2	0	2	2
Somalia	so	2	2	0	2	1
Burundi	bi	1	1	0	1	0
Cape Verde	cv	1	1	0	1	0
Guinea	gn	1	1	0	1	1
Malawi	mw	1	1	0	1	1
Reunion	re	1	1	0	1	1
Equatorial Guinea	gq	0	0	0	0	0
Liberia	lr	0	0	0	0	0
Sudan	sd	0	0	0	0	0
Zaire	zr	0	0	0	0	0

The Internet Domain Survey counts the number of IP addresses that have been assigned a name. Duplicate host names indicate a host with many addresses. The final number of hosts is all the hosts minus the duplicate names. The 2nd and 3rd level domain names differ according to how the top level domain name is organised eg. under ".com" domain - the number of 2nd level names equals the number of organisations using names registered under ".com" and the 3rd level may be meaningless. However ".uk" or ".za" have a few fixed sub-domains at the 2nd level eg. "org.za" and the 3rd level shows the number of organisations. Source: ISC 2000.

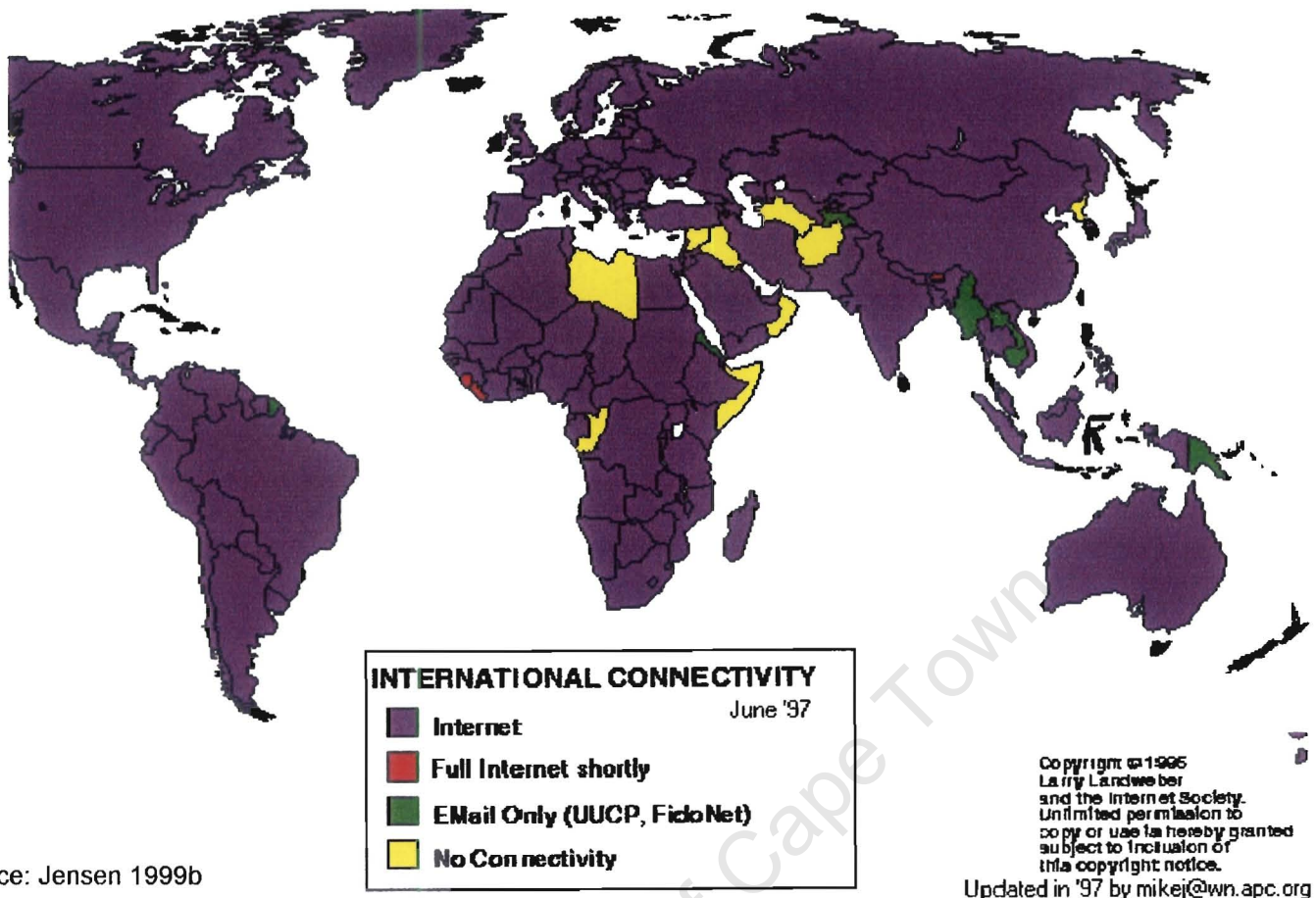
Table 3 - Distribution of Internet Hosts by Top-Level Domain - January 1995 - January 2000

Name	Domain	Jan 2000	Jan 1999	Jan 1998	Jan 1997	Jan 1996	Jan 1995
TOTAL		72,398,092	43,229,694	29,669,611	16,146,360	9,472,224	4,851,843
Commercial	com	24,863,331	12,140,747	8,201,511	3,965,417	2,430,954	1,316,966
Networks	net	16,853,655	8,856,687	5,283,568	1,548,575	758,597	150,299
Educational	edu	6,085,137	5,022,815	3,944,967	2,654,129	1,793,491	1,133,502
Japan	jp	2,636,541	1,687,534	1,168,956	734,406	269,327	96,632
United Kingdom	uk	1,901,812	1,423,804	987,733	591,624	451,750	241,191
United States	us	1,875,663	1,562,391	1,076,583	587,175	233,912	37,615
US military	mil	1,751,866	1,510,440	1,099,186	655,128	258,791	175,961
Algeria	dz	26	23	16	28	16	10
Angola	ao	6	0	4	2	0	-
Benin	bj	27	12	13	9	-	-
Botswana	bw	2,226	658	550	24	0	0
British Indian Ocean Territory	io	109	46	0	-	-	-
Burkina Faso	bf	211	176	45	1	0	0
Burundi	bi	1	0	0	1	-	-
Cameroon	cm	5	3	2	0	0	-
Cape Verde	cv	1	1	0	0	-	-
Central African Republic	cf	7	0	0	6	0	0
Chad	td	5	0	0	-	-	-
Comoros	km	33	9	-	-	-	-
Congo, Democratic Republic	cd	8	11	4	-	-	-
Congo, Republic	cg	3	1	0	1	-	-
Côte d'Ivoire	ci	629	237	253	202	3	-
Djibouti	dj	40	0	0	0	-	-
Egypt	eg	4,640	1,908	2,013	1,615	591	161
Equatorial Guinea	gq	0	0	-	-	-	-
Eritrea	er	6	0	0	1	-	-
Ethiopia	et	81	78	78	0	1	-
Gabon	ga	2	0	-	-	-	-
Gambia	gm	12	0	0	-	-	-

Ghana	gh	110	192	252	203	6	-
Guinea	gn	1	0	0	2	2	2
Guinea-Bissau	gw	15	15	11	-	-	-
Kenya	ke	602	686	458	273	17	0
Lesotho	ls	50	19	0	1	0	0
Liberia	lr	0	1	1	-	-	-
Libya	ly	3	4	1	-	-	-
Madagascar	mg	337	61	17	-	0	-
Malawi	mw	1	1	0	0	-	-
Mali	ml	11	1	0	15	0	0
Mauritania	mr	59	15	0	0	-	-
Mauritius	mu	823	575	201	122	0	-
Morocco	ma	961	548	431	477	234	0
Mozambique	mz	162	141	69	31	0	0
Namibia	na	2,043	2,654	640	262	11	0
Niger	ne	32	18	2	5	-	0
Nigeria	ng	77	410	49	4	0	-
Réunion	re	1	1	1	-	-	-
Rwanda	rw	259	0	0	1	-	-
St Helena	sh	188	36	0	-	-	-
São Tomé	st	447	115	12	-	-	-
Senegal	sn	306	194	117	69	14	0
Seychelles	sc	2	7	1	-	-	-
Sierra Leone	sl	75	13	0	-	-	-
Somalia	so	2	0	0	-	-	-
South Africa	za	167,635	144,445	122,025	99,284	48,277	27,040
Sudan	sd	0	0	0	-	-	-
Swaziland	sz	661	278	330	226	1	0
Tanzania	tz	218	129	25	3	0	-
Togo	tg	120	110	37	5	-	-
Tunisia	tn	96	67	69	39	82	57
Uganda	ug	139	113	30	17	58	-
Zaire	zr	0	0	0	1	-	-
Zambia	zm	537	303	181	173	0	69
Zimbabwe	zw	2,073	1,031	599	176	93	19

Since January 1998 the "new" Internet Domain Survey based on the number of IP addresses was published. Network Wizards warn that a small number of countries lost a number of hosts because of poor network connectivity, packet loss and no entry in the IN-ADDR.ARPA entry. Source: ISC 2000.

Figure 2 Internet Connectivity 1997



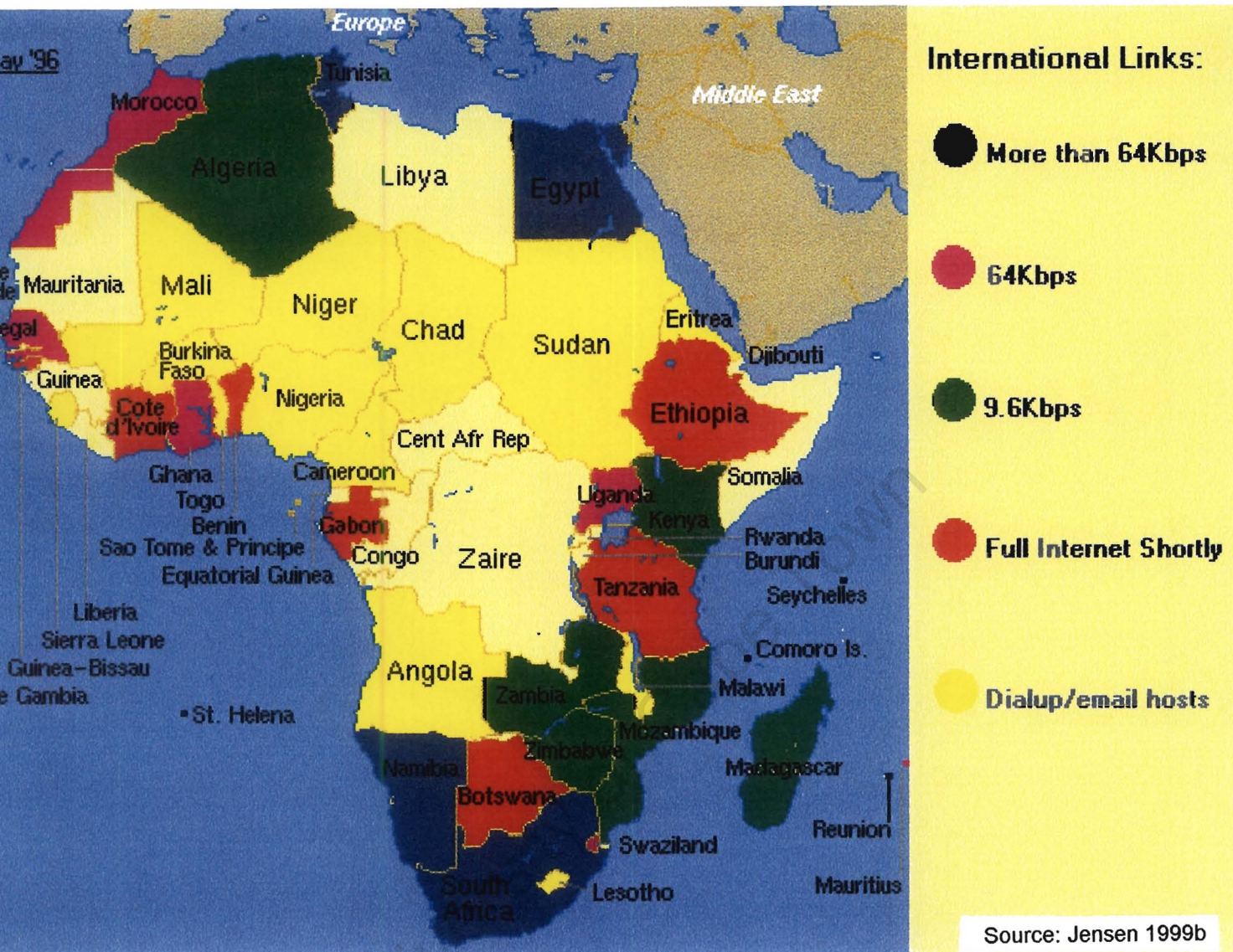
Source: Jensen 1999b

2.1 The Internet is "grotesquely uneven"

A quick glance at the map International Connectivity [Figure 2] might give the impression that the world is a globalised information society with a minority of countries having only e-mail access or not connected [also Figures 3 & 4] (Jensen 1999b). Yet this map is misleading as are the 1996 and 1999 maps called Internet access in Africa [see Figures 3 & 4] if they give the impression that Africa is included in the information society.

Correctly the Internet has been described as "grotesquely uneven in its distribution" (Kelly & Petrazzini 1997:1). The developed countries with only 15 percent of the world's population have 97 percent of Internet host computers. Two-thirds of the host computers are registered

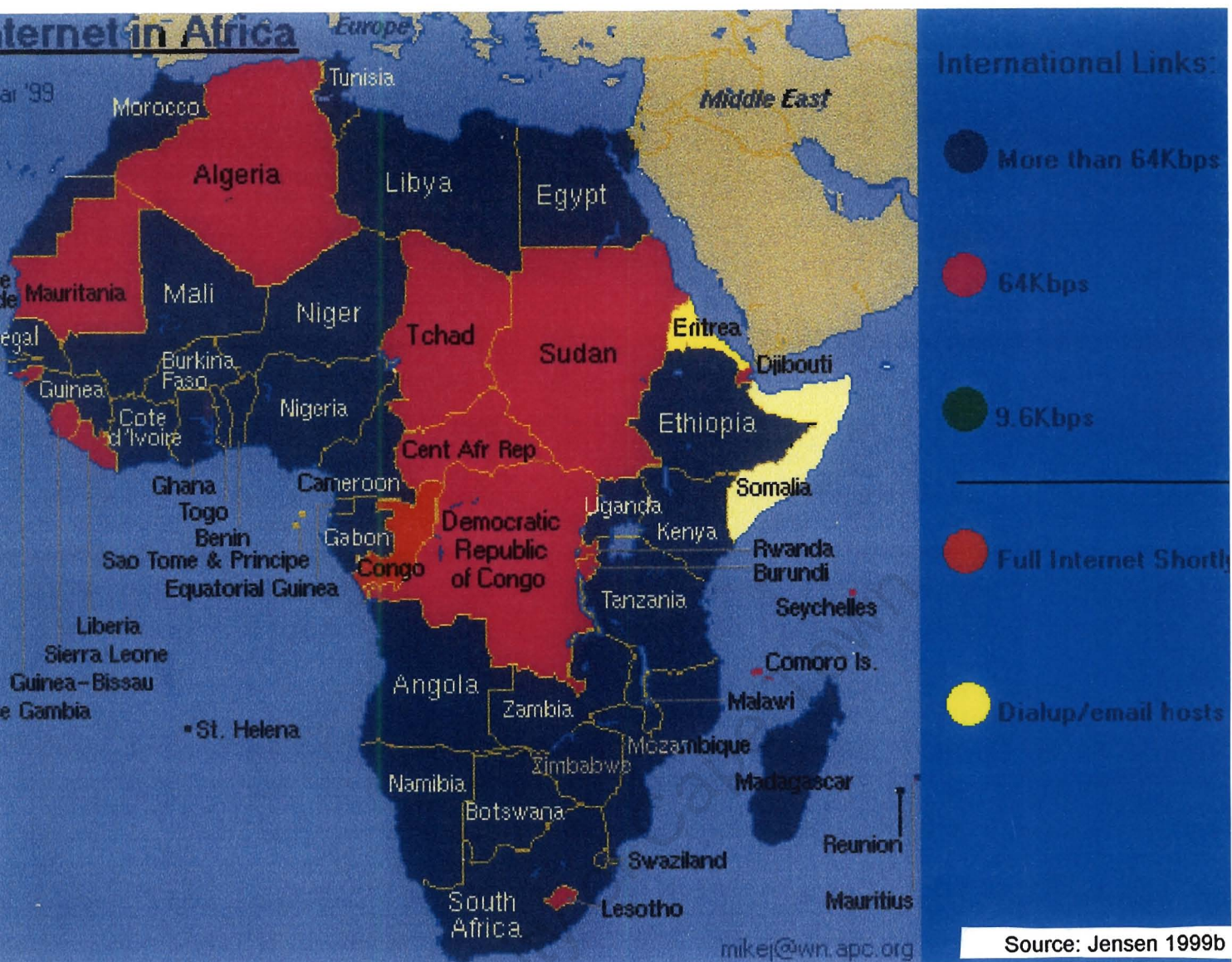
Figure 3 Internet Access in Africa in 1996



in the United States. Fewer than 1 percent are in Africa. In Iceland with a population of about 250,000 people there are more Internet host computers than in the whole of Africa (excluding South Africa) with 739 million people¹⁸ (Kelly & Petrazzini 1997:2).

There has been an extremely rapid growth in the Internet worldwide. In January 2000

¹⁸ In 2000 in Iceland there were 29,598 Internet hosts compared with 18,255 Internet hosts in Africa (excluding South Africa) (ISC 2000).



globally there were a total number of 72,398,092 Internet hosts according to Network Wizards who are one of the leaders in Internet domain surveys¹⁹. This exponential growth is from a total number of 4,852,000 Internet hosts worldwide in January 1995 and only 1,313,000 in January 1993 (ISC 2000).

¹⁹ The Internet Domain Survey is a twice yearly survey. Since 1998 because of restrictions in downloading domain data, or zone transfers, a new methodology has been used. The "old" survey counted the number of domain names that had IP addresses assigned to them. The "new" survey counts the number of IP addresses assigned a name. The new survey is therefore counting something different from the old survey making comparisons difficult. However Network Wizards made certain adjustments to allow for comparisons in the final host count (see Hosts column). Nevertheless a small number of countries lost a number of hosts due to poor network connectivity, packet loss, and entries not being placed in the IN-ADDR.ARPA tables (ISC 2000).

Yet this massive growth hides the growing exclusion of Africa from the information society. Africa remains in "a technological apartheid" (Castells 1998). In Africa even though there is exponential growth it is tiny (except South Africa).

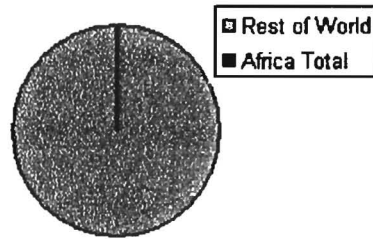
Take for example, Angola. In Angola with a population of 11 million in 1999 there were 0 Internet hosts but in 2000 there were 6 Internet hosts, a 600 percent increase, and 2 Internet or Cybercafés in Luanda the capital. What is the effect for the majority of the Angolan people?

"The majority of Angolans, the peasants, live wretched lives in medieval conditions: in rags, illiterate, unprotected against smallpox and polio. A hoe and a catana is all their technology. When they meet 20th century technology, chances are it is a rocket or a landmine" (Sayagues 1999).

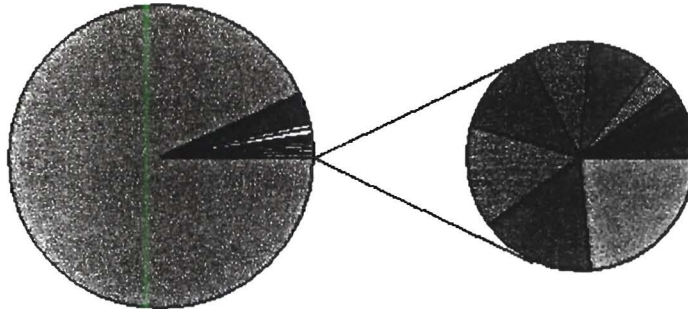
In Africa, excluding South Africa, in January 2000 there were a total number of 18,255 Internet hosts. This is 0.02 percent of the world's total number of Internet hosts. If South Africa is included the number of hosts is still low at 185,890 or 0.25 percent of the world's total. This total number of Internet hosts in the whole of Africa slightly exceeds the total number in one country, Poland (183,057 hosts). Excluding South Africa the total number of hosts in Africa was less than Uruguay (25,385 hosts), which is a developing country, or Romania (24,689 hosts) (ISC 2000). These figures show the enormous digital divide between Africa and the rest of the world including other developing countries [see Table 3 and Figure 5].

Although the map in Figure 6 Internet hosts for every 1 million people is dated 1997 the digital divide is clear with the majority of Internet hosts, 1,000 hosts for every million people,

Internet Hosts WorldWide

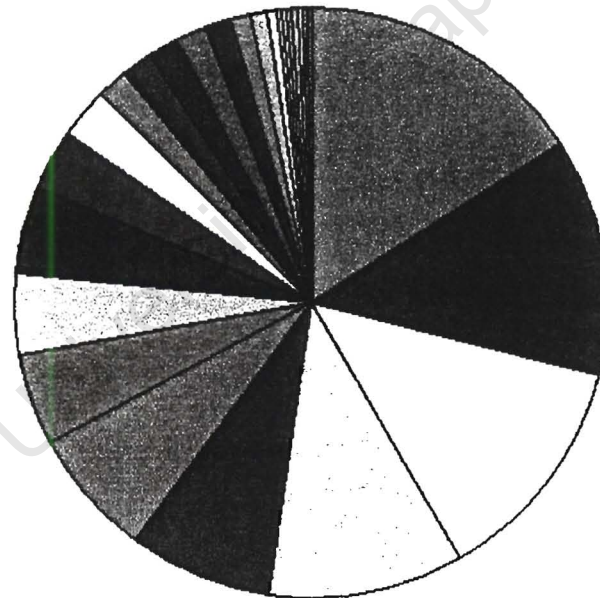


African Internet Hosts



- | | | | |
|----------------|-----------------|----------------|-------------------------|
| □ South Africa | ■ Botswana | □ Zambia | ■ Togo |
| ■ SSA | ■ Swaziland | ■ Senegal | ■ Mozambique |
| □ Zimbabwe | □ Mauritius | ■ Tanzania | ■ Ethiopia |
| □ Kenya | ■ Cote D'Ivoire | ■ Burkina Faso | □ Sao Tome And Principe |
| ■ Namibia | ■ Ghana | ■ Nigeria | |

African Internet Hosts excluding South Africa



- | | | |
|-----------------|----------------|-------------------------|
| ■ Zimbabwe | □ Ghana | ■ Ethiopia |
| ■ Kenya | ■ Zambia | ■ Sao Tome And Principe |
| □ Namibia | ■ Senegal | □ Uganda |
| □ Botswana | □ Tanzania | □ Mauritania |
| ■ Swaziland | ■ Burkina Faso | □ Madagascar |
| □ Mauritius | ■ Nigeria | □ Lesotho |
| □ Cote D'Ivoire | ■ Togo | □ Guinea-Bissau |
| | ■ Mozambique | ■ Guinea |
| | | □ Benin |
| | | ■ Comoros |

in the developed countries²⁰. Whereas in Africa there are the lowest numbers of Internet host at 0-1 per 1 million inhabitants South Africa is the noticeable exception with over 1,000 hosts per 1 million inhabitants (Kelly & Petrazzini 1997).

The number of Internet hosts in 1997 in Africa is given as 0.6 percent of the world total in Figure 7. However in January 2000, Africa was only 0.25 percent of the world total number of Internet hosts. This shows that "the global gap between haves and have-nots, between know and know-nots is widening" (UNDP 1999:57).

According to SADC²¹ the Internet would enable SADC to enter the "information age, leapfrogging the industrial age" and is "a good yardstick on which to measure progress toward an information society" (SADC 1998:7, 16). If the Internet is the "yardstick" then the lack of Internet provision shows that Africa is excluded from social and economic development and globalisation or the information society.

The Internet host figures reflect the global power relations. The Internet is driving globalisation and these figures confirm the dominance of the United States in the new economy. Although Japan with 2,636,541 Internet hosts and the United Kingdom with

²⁰ "We may well be adding a new divide to the already well-entrenched one between rich and poor: a digital divide between the information-rich and information-poor" - Frechette UN Deputy Secretary-General (ECA 1999:1).

²¹ The number of Internet hosts in SADC are in order of maximum distribution in January 2000 was: South Africa 167,635, Botswana 2,226, Zimbabwe 2,073, Namibia 2,043, Swaziland 661, Mauritius 823, Zambia 303, Tanzania 218, Mozambique 162, Lesotho 50, Congo Democratic Republic 8, Angola 6, Malawi 1, and Seychelles 2 [Table 2 & 3]. In SADC there were a total of 176,211 Internet hosts. Excluding South Africa there were only 8,576 or 0.011 percent of the global total number of Internet hosts (ISC 2000).

Figure 6 Internet hosts for every 1 million people

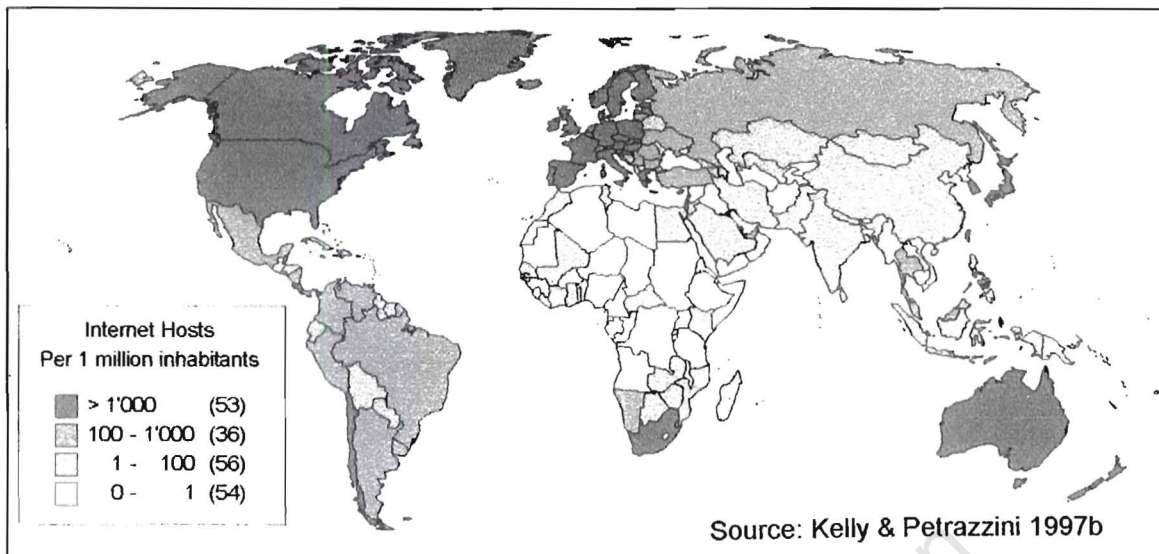
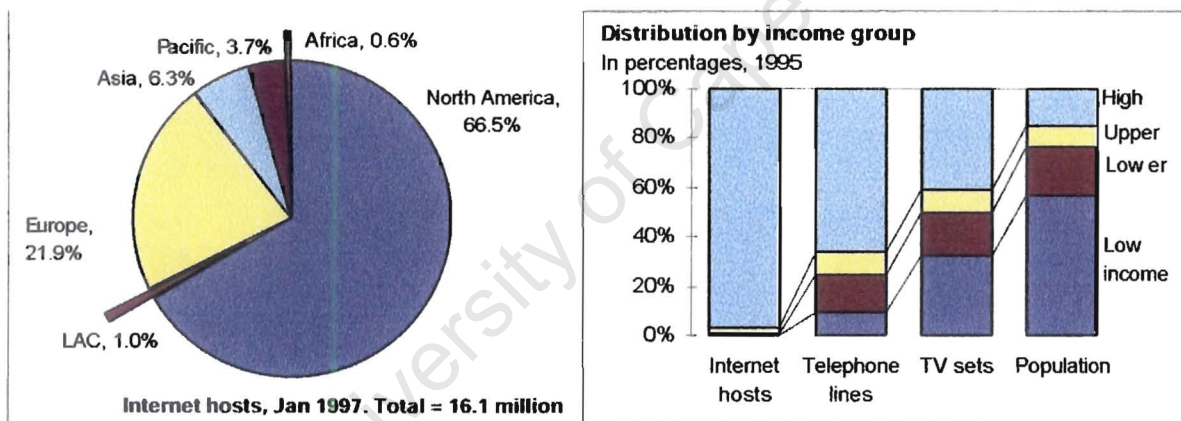


Figure 7 Distribution of Internet hosts by region and income



1,901,812 Internet hosts appear to have more hosts than the United States these figures are misleading. The United States has 1,875,663 Internet hosts and a further 1,751,866 military hosts totalling 3,627,549. Moreover registered in the United States are 24,863,331 commercial (.com) Internet hosts, 16,853,655 network (.net) Internet hosts, and 6,085,137 educational (.edu) Internet hosts [see Table 2 & 3 and Figures 6 & 7] (ISC 2000).

2.2 Internet users

There are an estimated 322 million Internet users worldwide (Global 2000). In 1999 the NUA Internet Survey²² estimated that there were 201 million Internet users (NUA 1999). This number is expected to grow to 700 million in 2001 (UNDP 1999b:1). The highest number of Internet users were in Canada and the United States at 112.4 million Internet users. In Europe, with 47.15 million users there were less than half the number of users compared with the United States and Canada and its position is said to be declining. Europe has been criticised for not following the example of the United States in globalisation and the new economy (Europe 2000; NUA 1999). In 2000 the United States was estimated to have more Internet users than the next 15 countries combined (Austen 2000).

Although the United States has the highest numbers of Internet users there is a growing digital divide the United States. The divide is between high and low incomes, educational level, richer urban and poorer urban areas, urban and rural areas, gender and race. People with high incomes have greater access to telecommunications that usually provides Internet access unlike people with low incomes [see Figure 7]. The rich also have access to electricity that is needed for the Internet. The demand for electricity because of increased computer use has grown in the United States by 35 percent (Davis 2000). Yet most of Africa lacks electricity and where it exists is unreliable e.g. Kenya and Nigeria²³ have power failures for hours on a

²² NUA's figures include adults and children who accessed the Internet at least once in the three months before the survey. The figures are not only of Internet Account holders but if only Account holder figures are available these are multiplied by 3 to give the number of Internet users. An average is taken if there is more than one survey for a country or the more comprehensive or reliable survey is used. NUA warns that estimating how many are online is "inexact" and at best an "educated guess" (NUA 1999).

²³ Electricity provision is so poor in Nigeria that wealthy homes, medium and large businesses

daily basis (Cunliffe-Jones 2000; Githinji 2000).

In 1999 out of a total 201 million Internet users worldwide Africa had the tiny number of 1.72 million users - fewer than 0.5 percent of the world's total number of Internet users - showing Africa's exclusion (NUA 1999). However the majority of Africa's Internet users are in South Africa with over 1,266,000 in 1998. Although Internet growth in South Africa is high in 1998 for the first time the number of South African Internet users did not double but only grew at 86 percent (ISPA 1999; Media 1999).

Therefore in 1999 South Africa dropped from being in the top 20 most connected countries globally to being ranked 21st in number of Internet hosts²⁴. The drop is not surprising because the majority of the people in South Africa are poor and there is over 40 percent unemployment. But because South Africa has one of the most unequal distributions of income in the world²⁵ there is an Internet market. Out of a population of 40 million only 5 percent have access to computers and networks, "this country is so skewed economically: a good chunk of the population will never connect to a lightbulb in their lives" (ISC 2000).

The majority of the South African population are excluded from being Internet users. The digital divide in South Africa is similar to that in the United States although on a much larger scale. The average South African Internet user is a high income earner, urban home owner,

have their own electricity generators (Cunliffe-Hones 2000).

²⁴ In 1995 when it had 27,040 Internet hosts it was ranked 17th and in July 1996 with 83,349 Internet hosts it was ranked 14th (Media 1999).

²⁵ The poorest 40 percent of the South African population earn 3.8 percent of all income while

more educated, English-speaking, male²⁶ 25-30 years and white (Media 1999a). Other countries in Africa would reflect a similar profile of wealthier, better educated, young male Internet users, an elite privileged by access to Internet information and communication.

Worldwide there have been a few changes to this pattern of the average Internet user and there were 31.1 million men and 31.3 million women online in April 2000. Also the age of Internet users increased with more Internet users in their mid-40s and the fastest growing group of users were women over 55 years. However a huge digital divide still remains between the rich and the poor: 21 percent of Internet users have incomes of less than \$15,000 and 78 percent have incomes of over \$75,000 (Austen 2000).

English-speakers are advantaged in the use of the Internet because of the 2.1 billion Internet pages²⁷ 80 percent of websites use English (NUA 2000; UNDP 1999:62). Globally only 1 in 10 people speaks English (UNDP 1999:62). The majority of web pages are based in the United States and this affects content. There is a dearth of web pages with African indigenous knowledge content (NUA 2000)²⁸. However there is technology available for example for Japanese, Hindi and Chinese languages and therefore the problem for African languages is not

the richest 10 percent earn about 52 percent of the country's income (White 1999).

²⁶ Although there is an increase in percentage of female users from 16 percent to 19 percent the majority are male (Media 1999a).

²⁷ According to Cyveillance there are 2.1 billion web pages up in six months from 1 billion pages measured by Inktomi. It is estimated 7 million new web pages are added daily (Inktomi 2000; NUA 2000).

²⁸ "Africans must participate in the production of information because their contribution is critical to maintaining the quality and relevance of information from the region" according to UNECA (Africa 1999).

technological but that Africa including its languages is being excluded.

A far greater problem for Africa is illiteracy that is nearly 50 percent in sub-Saharan Africa because literacy is said to be essential for the Internet (Holman & Hawkins 2000). Over 40 million children in sub-Saharan Africa get no basic education and spending on each child is lower than 20 years ago (Schooling 1999). The Internet can help promote literacy and provide information to the illiterate because radio, video and multimedia is provided over the Internet as well as touch screens and graphics (Bourbeau 1997; Stones 2000a).

Internet access needs to be provided in schools. In the United States most schools have Internet access and Internet access is generally increasing in developed countries. However Africa lags behind with the exception of South Africa where some schools have Internet connections (Castells 1999:4). For tertiary education using distance learning or tele-education is not cheap. Although there is the beginnings of an African Virtual University for information and communications training substantial investment is needed for e-universities (AVU 1999).

High charges exist for telecommunication and Internet access in Africa. Costs of the Internet in Africa are estimated to be up to \$100 a month compared with \$10 in the United States (UNDP 1999:62). A huge advantage is that local calls in the United States are free with a low line rental charge. Low Internet costs would provide the following benefit. A 42 page document from New York to Tokyo by Air Mail costs \$7.40 and takes 5 days. By courier it costs \$26.25 and takes 24 hours. By fax it costs \$28.83 and takes 31 minutes. But by Internet e-mail and mailing can be to multiple recipients it costs \$0.095 and takes 2 minutes (Kelly

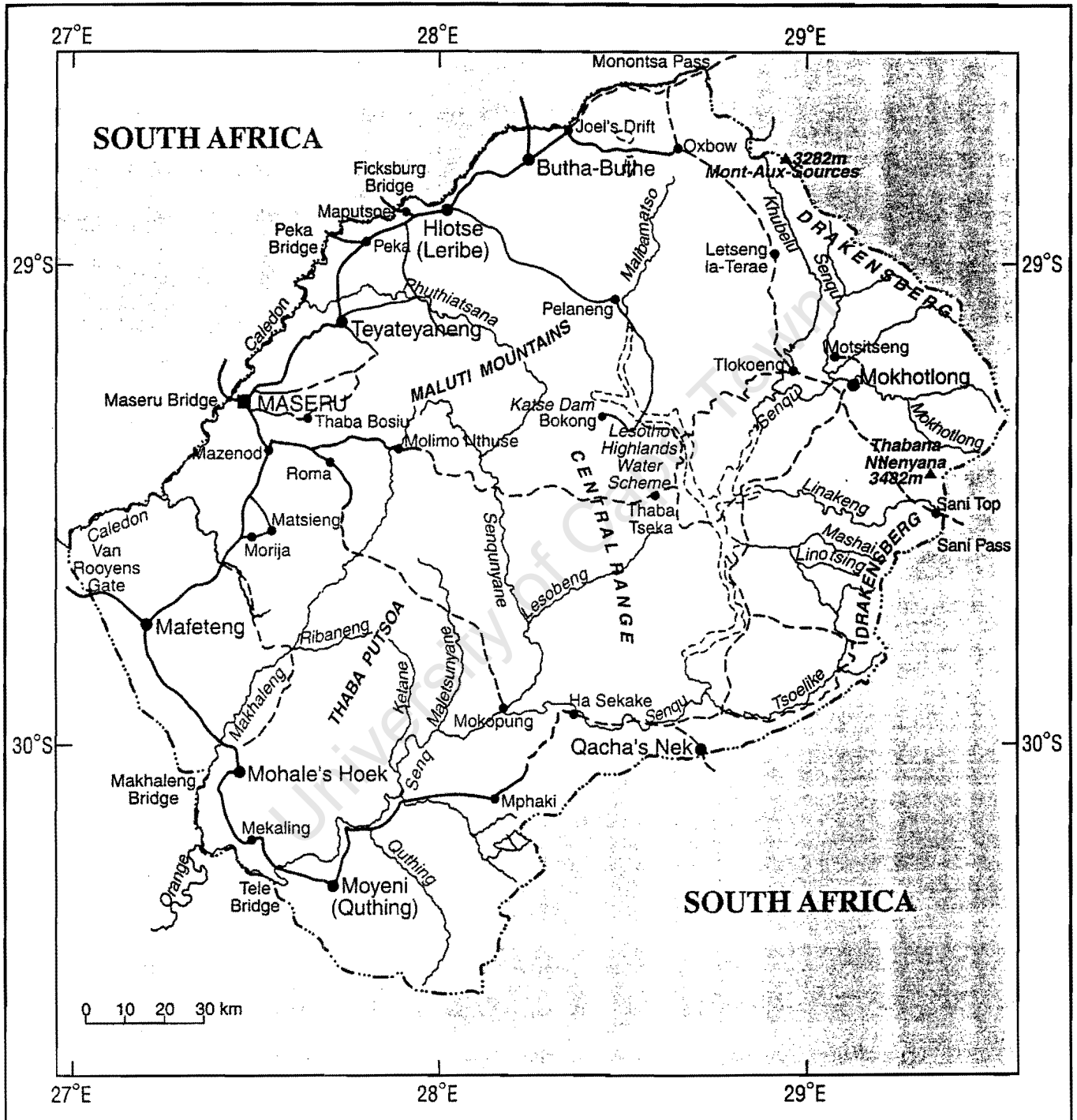
1997a:5). Yet Africa is largely excluded from these benefits.

To prevent the digital divide widening in Africa and entrenching the patterns of elitism already dividing society, universal access to the Internet is needed, for example, in libraries, Internet cafés, or Cybercafés, telecentres, schools and clinics yet this does not exist in most countries in Africa (Jensen 1999:5; UNDP 1999:62).

4 Conclusion

In this chapter statistics for telecommunications and the Internet have been presented that show that Africa is excluded from the information society. Without telecommunications that is the method of accessing the Internet, the Internet will not be provided in Africa. Even with the growth of cellphones the majority of Africans are excluded because of poverty. There is a growing digital divide between the developed and developing countries and between the rich and poor within countries such as South Africa. It is against this background of the overwhelming evidence that Africa is excluded from the information society that Lesotho will be discussed in the next chapter.

Lesotho



Source: Africa A-Z 1998:207

CHAPTER 6

The shepherd and the Internet: case study of Lesotho

This chapter is concerned with the small land-locked country of Lesotho, surrounded by, and dependent¹ on, South Africa. The questions investigated in this chapter are whether the Internet will reduce or eradicate poverty in Lesotho and whether it will provide fast-based information for development in Lesotho.

Lesotho is a highly impoverished country because of land conquest by South Africa which historically forced Lesotho to act as a cheap migrant labour reserve mainly for South African mine labour in order to survive. In recent years this role has declined, without being replaced by any other real basis of the economy. Lesotho lacks an efficient, reliable and cheap telecommunication and electricity infrastructure which are the basics for a good quality Internet service.

Little has been written on the Internet in Southern Africa except for South Africa. This chapter is the first account of the development of the Internet in Lesotho. A study of the information society in Lesotho highlights the issues and processes of the development of the information society not only in Southern Africa, but in Africa.

¹Lesotho is considered to be so dependent on South Africa that it could be called a "province" of South Africa (Southall 1998:84; McDonald 1998:35; World Bank 1995:1). Stephen Gill, curator of Morija Museum and Archives, raises this question as to whether Lesotho should be included as a province in South Africa in a museum exhibition on the history of Lesotho that I visited in 1998.

As regards the information society, South Africa is the most connected country in Africa. It has the highest number of Internet users in Africa and it is said that South Africa could be regarded as a hub² for Internet development and provision in the Southern African region (ECA 1998). Given Lesotho's geographical position within, and dependency on, South Africa, the development of the Internet and some of its benefits might be expected in Lesotho. However this has not occurred in Lesotho.

Because it is dependent on and entirely surrounded by South Africa Lesotho is an obvious choice as a test case for the development of the Internet in Southern Africa. It could also be seen to be a test case for the development of the Internet in the rural areas of South Africa. Lastly because it has many of the typical characteristics of other impoverished African countries it could be seen as a test case for the development of the Internet in a typical small African country.

1 The economy of Lesotho

1.1 Conquest and migrant labour

For historical reasons Lesotho has been dependent on South Africa as a cheap labour reserve. This is because in the mid-nineteenth century white settlers seized much of Lesotho's arable land and forced the Basotho into the harsher mountainous region that is now known as the

² There is said to be Internet development in countries such as Lesotho because South African Internet service providers provide these services (Kelly 1997:14).

independent state of Lesotho³. In 1884-5 crippling droughts in South Africa that in the Cape "people are dying with hunger" but instead of importing grain from Lesotho cheap American wheat was imported destroying Lesotho's exporters (Bradford 2000:32-33). South Africa also instituted protectionist measures against agricultural exports from Lesotho in the 1890s to ensure Lesotho remained subservient to South Africa (World Bank 1995:1). This "colonial" attitude to Lesotho continues today and as a member of the Southern African Customs Union (SACU) Lesotho is forced to pay South Africa a major percentage, 60 percent, of Lesotho's budget revenues (Government 1998:15).

In Lesotho only 9 percent of total land area is arable. But this inadequate arable land area sustaining a high population continues to decline because of unreliable rain, droughts, soil erosion and land degradation. Therefore there is mainly sub-subsistence farming in the rural areas (UNDP 1996:1; World Bank 1995:1).

The conquest of Lesotho by South Africa, the World Bank writes, "followed the pattern of the creation of so-called native reserves in the Southern African region" (World Bank 1995:iii, 1). As a cheap labour reserve Lesotho's impoverishment has paralleled the lack of development in the apartheid Bantustans in South Africa. That is why Lesotho can be a test case for rural Internet access in South Africa.

As a result of the conquest of their land and wars, droughts, lack of arable land or other means

³ Moshoeshoe, Lesotho's paramount chief, told a missionary, "You are civilised. You do not steal cattle...you steal entire countries" quoted by Bradford (2000:10).

of livelihood in order to survive the impoverished Basotho were coerced to become farm labourers and mainly cheap migrant labourers on the mines in South Africa⁴. The remittances from the migrant mine workers are the main source of Lesotho's income (EIU 1998:52). In the 1980s remittances constituted 50 percent of Lesotho's GNP and a staggering 100 percent of GDP according to the World Bank (1995:1).



Source: Struthers 1999

Lines of unemployed near the landmark site of the Basotho Hat, which was destroyed after the South African invasion. In the background on the right is the Internet Café.

⁴ In 1995 an estimated 70 Basotho were killed annually on the mines and a further 840 seriously injured. The chances of diseases (eg. lung) and disabilities as a result of the poor working conditions are high at an estimated one in two or one in three. Travelling to and from the mines is dangerous and as many mine workers are killed on the roads as in mine-related accidents (McMurchy & Gay 1995:10-11).

It is said that because Basotho boys traditionally have the expectation to be mine labourers, which requires unskilled or semi-skilled, and illiterate or semi-literate labour, they received little education with 30 percent more girls attending schools than boys. As child labourers boys were forced to tend the livestock as herdboys or shepherds (World Bank 1995:26). However the expectation of work on the South African mines is declining. Today it is more an exception for boys to be herdboys or shepherds and more boys attend schools but their future now is unemployment. Large scale mine redundancies have occurred. According to David Coplan and Thoahlane Thoahlane this is,

"part of a strategy to undermine the NUM [National Union of Mineworkers], reduce militancy, avoid the consequences of collective bargaining, reduce labour costs and engage in the 'social dumping' of the costs of capital investment and restructuring into the removed environment of employment-hungry labour reserves" (Heading 1994).

In 1986 Lesotho census figures showed that 50 percent of Basotho adult males were migrant labourers in South Africa. By 1995 this figure had dropped to 40 percent and continues to drop as more mine workers are retrenched (Sechaba 1997:1). The increasing numbers of redundancies is resulting in even greater impoverishment (McMurchy & Gay 1995:10).

Twenty-five percent of mine workers in South Africa used to be from Lesotho but the figure has dropped. In 1992 the number of migrant mine workers was 120,000 (EIU 1998:75). By 1996 the numbers had dropped to 98,000. In 1997 there was a further drop to 91,000. In the first three quarters of 1998 there was a further drop of 23 percent to 71,452 (EIU 1999:28, Central Bank 1998:8). The decline in the number of mine workers employed on South African mines and the fall in real terms of the remittances has meant a drop in value from remittances (EIU 1998:55). Remittances by 1995 had fallen from 50 percent to 31 percent of Lesotho's

GNP (Government 1998b:18).

In July 1999 the Bank of England started its programme of sales of gold reserves. The price of gold plummeted and gold mines, such as East Rand Proprietary Mines (ERPM), were forced to close. A further 80,000 jobs were threatened as sales of gold reserves continued by the International Monetary Fund, United Kingdom, and other developed countries (Grawitzky & Graulich 1999). The continuing decline of profitability of the mines, particularly the gold mines, which employ 80 percent of migrants, means that the numbers are likely to drop further (EIU 1998:55).

Since 1995 the South African government has made two offers of permanent residence to migrant workers from Lesotho. As a result, by 1997 an estimated 21,000 Lesotho citizens were granted permanent residence and another 13,000 were having their applications processed (Sechaba 1997:1). The consequence for Lesotho of acceptance of these offers could be a further drop of 25 percent in earnings from remittances of migrant workers (EIU 1998:51).

1.2 One of the world's poorest countries

Lesotho is one of the world's poorest countries [ie. one of the least developed countries]. Its plight is highlighted as it is ranked as one of the forty lowest income economies in the world (World Bank 1995:10). In 1997 on the human development index (HDI)⁵ Lesotho was ranked 137 out of 175 countries with thirteen Sub-Saharan countries ranked higher (UNDP

⁵ The HDI index is a composite index of GDP per capita, linked to life expectancy, and education (UNDP 1998:2).

1997b:148). Life in Lesotho is hard and life expectancy is a young 58 years and infant mortality is high at about 69 deaths per 1000 infants (African development 1998:204). There are diseases of poverty, such as malnutrition and diarrhoea and few doctors with only one doctor for 15,000 people (Government 1998:24). Safe drinking water is insufficient in both urban and rural areas and sanitation is inadequate. More than 50 percent of households have no sanitation facility and even in the capital Maseru only 20 percent of plots are connected to a sewerage system (SADC 1998:38-44; World Bank 1995:100).

A tiny 2 percent of the population have electricity⁶. Even community health clinics "don't have electricity. They use candles" (Ms A 1998). This is despite the possibility for the whole population to have affordable quality electricity because of the abundant available hydro-power⁷ (Government 1995:96). Yet there is no mass electrification campaign in Lesotho. A shocking 70 percent of energy needs are still met by wood or dung leading to health problems, soil erosion and land degradation (EIU 1998:59-60).

Education levels reflect Lesotho's poverty with higher education in the capital and completion of primary education decreasing in the smaller urban areas and rural areas⁸. Most unusual in Africa, or the world, girls are more literate and likely to attend both primary and secondary school than boys because boys have been used as cheap labour to herd cattle. Also the number

⁶ Ninety five percent of energy supplied in Lesotho has been imported from South Africa (EIU 1998:59).

⁷ Since August 1998 the output of the Muela hydro-electro power scheme is more than double Lesotho's domestic requirements (EIU 1998:59-60).

⁸ Literacy figures for literacy in Lesotho range from a high 71 percent (EIU 1998:57) to a low 29 percent (African 1998:204).

of women in formal employment is high at 40 percent but many are employed in low wage jobs (EIU 1998:57; Lesotho 1998:13095-13096; Torres 1998:70; World Bank 1995:34).

Recently a year of free schooling has been introduced. Already overcrowding exists (pupil teacher ratio is 55:1) but free schooling will mean doubling of class sizes as 100,000 children need a place or introducing morning and afternoon shifts. In some schools in Maseru the pupil teacher ratio is 77:1. There are serious problems because the resources do not exist (EIU 2000). This will further stretch teachers who are already overstretched and 20 percent of teachers are unqualified. "We live in an age where students sit on the ground using a stone to write on" because there are too few classrooms and 30 percent of students are taught outdoors which will increase (Mr I 1998). These poor conditions result in high drop-out and repeat rates and minimal education. As far as information technology skills or computer literacy skills are concerned these are non-existent in schools with the exception of the elite Machabeng High School in Maseru (Government 1995:55; Government 1997:174).

The fact is that 80 percent of Lesotho's population are poor (Government 1995:104; World Bank 1995:vi, 111). There is also a growing gap between the haves and the have-nots. Income inequality is increasing between the top 10 percent who receive a substantial 44.06 percent of the national income compared with the bottom 10 percent who receive an extremely tiny 0.86 percent⁹. There is a widening gap between the rural and urban areas. The Gini Coefficient¹⁰

⁹ Even if the bottom 40 percent of households are looked at then they only received a small 8 percent of the national income (World Bank 1995:12).

¹⁰ The Gini Coefficient measures the degree of (in) equality with 1 as absolute inequality and 0 being absolute equality (World Bank 1995:v).

that measures inequality shows a marked increase in inequality in Lesotho especially in the rural areas. In 1967/69 in the rural areas the Gini Coefficient was 0.23 and in 1993 it had more than doubled to 0.55 (Kingdom 1997c:6; World Bank 1995:12).

Most of Lesotho's population of 2.2 million are young with over 40 percent under 15 years of age and over 54 percent under 20 years (EIU 1998:56; Kingdom 1998:22). But for the youth there is little future. Every year 15,000 new job seekers enter the job market but only 2,000 jobs are created domestically a year (EIU 1999b:56). Unemployment is high at about 50 percent and the majority, 33.1 percent, are youth between 15-24 years (Kingdom 1997b:14).

By 1997 the size of the labour force had dropped to an estimated 593,189 if child labour¹¹, i.e. over 10 years, is included (Government 1997b:3). Child labour in Lesotho is estimated at over 19 percent of the population (Torres 1998:60).

The few formal jobs available are mainly low-waged and low-skilled¹². The annual average wage is low at M19,000¹³ in 1996 (EIU 1998:55). But this average hides pitiful wages. The World Bank in collaboration with the Lesotho government uses the threat of low wages in South Africa to promote docile trade unions and lower wages in Lesotho called "attractive labor wage rates" (Government 1995:132, 15, 18).

¹¹ The International Labour Organisation (ILO) Convention 138 defines child labour as children aged between 10-14 years old (Torres 1998:60).

¹² In 1993 about 28 percent of the labour force held formal wage jobs and 72 percent were in agriculture and informal sectors (World Bank 1995:47). In the SADC region it is estimated that out of a population of 180 million fewer than 10 percent have a job in the formal sector (Torres 1998:13, 42).

As a result of the 1998 South African invasion of Lesotho and the subsequent destruction of businesses, nearly 6,000 jobs were lost. Most small businesses destroyed were owned by Basotho, of whom 80 percent were Basotho women, many of whom were the sole breadwinner in a family (EIU 1999:28; LCCI & Sechaba 1998:iii-iv, 14, 17).

Over 51.3 percent, the greatest percentage of the working population, are in sub-subsistence farming and earn little if any income barely making ends meet¹⁴. Over 91 percent of the poorest households are found in the rural areas (World Bank 1995:20). This is because there is a "permanent crisis" in agriculture (Sechaba 1994:9). Because of the poor crop yields Lesotho is now dependent on South Africa for almost all basic food (EIU 1998:63). This underlies the fact that youth lack a future in the rural areas as shepherds. Unemployment is now the expectation.

Increasingly there is a rural movement towards the urban areas in order to survive¹⁵. This urban movement is exacerbated by the increasing numbers of retrenched mine workers remaining in the urban areas (EIU 1998:56). There is little opportunity for employment on Lesotho's mines, which employ only 1.9 of the labour force¹⁶ (EIU 1998:62).

¹³ The Maluti is pegged at a par with the South African Rand (Central Bank 1998:14).

¹⁴ The agricultural share of GDP fell from 50 percent in 1973 to around 10 percent in 1996 (EIU 1999b:56). Harvests are poor because of the limited arable land, mountainous terrain, soil erosion, poor farming methods, droughts etc (EIU 1998:63).

¹⁵ An estimated 23 percent of the population is urbanised (EIU 1998:56).

¹⁶ Since 1982 when world diamond prices dropped the open-cast mine at Letseng-la-terae, owned by South African De Beers, stopped production. Diamonds in 1982 formed 55 percent of Lesotho's exports. Production figures produced are low and only 11,000 carats are

In 1986 the Lesotho government signed the treaty with South Africa which started the Lesotho Highlands Water Project (LHWP)¹⁷. Since 1998 this project has exported water, "White Gold", to Gauteng, and has increased Lesotho's dependency on South Africa for revenue. Building of the dams caused major economic and social disruption as whole villages were moved from their land. Only 3,500-4,000 mainly temporary or casual jobs have been created. At all levels of employment, but particularly the higher paid jobs, foreign contractors and not Basotho are employed (EIU 1999b:48, 63-64; Government 1995:5).

Only 5.9 percent of the labour force is employed in manufacturing, mainly in textile, clothing and footwear companies, owned by foreign companies from Taiwan, Singapore, Hong Kong and South Korea, producing 80 percent of total exports and contributing 14 percent of GDP (EIU 1999b:58). Lesotho may be described as an Export Processing Zone (EPZ) (Torres 1998:25). An EPZ is a fundamental principle of the IMF's and World Bank's neo-liberal structural adjustment programmes which are "ruining the economies of developing countries" (Chossudovsky 1998). The Lesotho government gives foreign companies incentives such as, cheap labour, weak trade unions, poor working conditions, preferential trade agreements, lack of quota restrictions, low taxes (dropped from 37.5 percent to 15 percent in 1996/97) and 60 year leases (EIU 1998:62, 65; Torres 1998:25).

produced compared with 105,200 carats in 1980. Foreign companies, mostly South African and Canadian, continue to hold concessions for possible future exploitation (EIU 1998:62).

¹⁷ The LHWP has been hit by a corruption scandal involving more than 20 international companies and individuals on bribery charges of a former Lesotho government official, Masupha Sole, who received R12 million in bribery money to grant multimillion contracts (Greybe 1999).

The majority of the formally employed are in the service sector¹⁸, which employs about 23 percent of the labour force¹⁹ contributing over 42 percent to GDP (Lesotho 1996:50; UNDP 1998:7). The growth in the service sector worldwide is said to be part of the "new economy", the information society, in which there is a shift to services. Similar to the worldwide trend most service jobs in Lesotho are low-paid.

2 Telecommunications

2.1 "Very inadequate" telecommunications

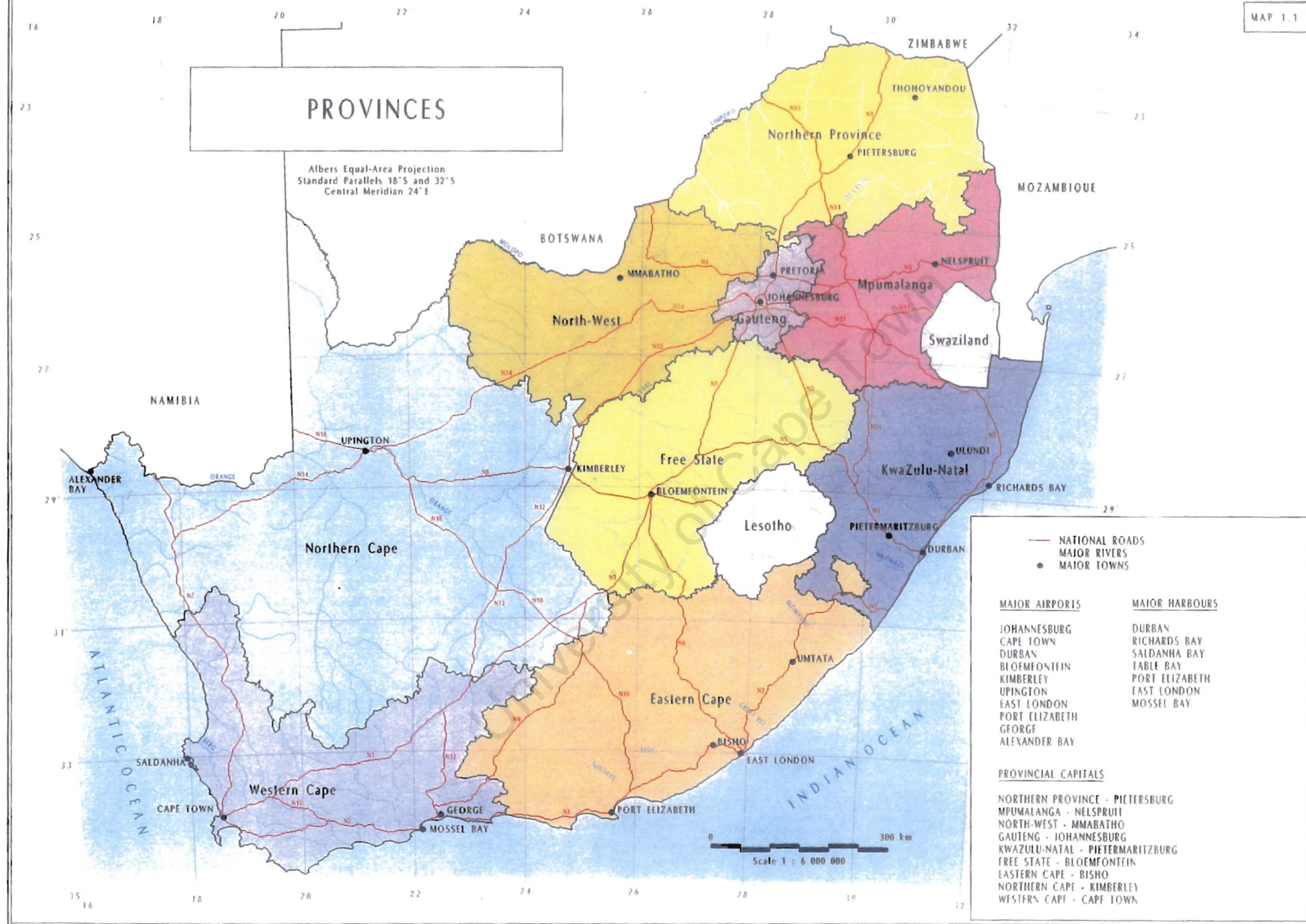
Lesotho is landlocked in South Africa yet one is "cut off from the world in Lesotho" because of the lack of decent telecommunications from a "very inadequate" telecommunications service (Kingdom 1998:26; Mothibeli 1998).

However the Economist Intelligence Unit claims that telecommunications have improved in Lesotho. They state that the telecommunication networks have been modernised and extended and connections have grown on average 13 percent per year from 1990 to 1998 after years of no growth. Although they admit that only 28,000 telephones are in use giving a low teledensity of 1.3 telephones per 100 people (EIU 1998:59).

¹⁸ Services included in this sector and the percentage contributed are: wholesale and retail trade 9.5 percent, catering 1.6 percent, transport and communication 4.6 percent, finance and insurance 5.8 percent, real estate and business services 2.2 percent, public administration 8.4 percent, education 8.4 percent, health 3.1 percent and other services 1.3 percent (UNDP 1998:7).

PROVINCES

Albers Equal-Area Projection
Standard Parallels 18°S and 32°S
Central Meridian 24°E



Map of Lesotho surrounded by South Africa

Source: Environmental 1997:2

But in the official restructuring document on the telecommunications industry the situation is described as so dire that the Lesotho Telecommunications Corporation (LTC) is,

"incapable of meeting the needs of Lesotho for even basic services let alone enhanced and Value added services. The health and culture of the corporation is such that major financial and industrial surgery is required for it to survive" (Government 1998:26).

Telecommunications are important for development as Mbeki said at Africa Telecom, that "we are convinced that the telecommunications sector can and must stand at the cutting edge of this exciting and historic process of the rebirth of Africa which has been designated the African Renaissance" (Mbeki 1998:6). However Mbeki while speaking of the African Renaissance developing Africa and linking this to telecommunications does not put his words into practice by assisting Lesotho. An extraordinary omission, again given Lesotho's position within South Africa is the exclusion of Lesotho from the countries visited during the African Connection rally that promoted telecommunications and Internet connectivity.

Lesotho seems such an obvious country because of its proximity for inclusion in the African Renaissance and the African Connection Rally and for inclusion in the benefits from South Africa's connectivity. As South Africa has the highest connectivity in Africa it has the advantage of a fairly developed infrastructure. A web of connectivity across South Africa surely covers Lesotho. Or is Lesotho to remain excluded? In contrast to the idea of seamless connectivity globally, let alone in a small part of Southern Africa, the Kingdom in the Sky, Lesotho, is in "the remotest situation in the world" (Mr C 1998).

Like much of the rest of Africa, Lesotho is burdened with a corrupt and inefficient telecommunications industry monopolised by the parastatal, LTC. The escalation in problems

at LTC and the abysmal lack of standards have acted "as a positive barrier to socio-economic development of the whole country" (Mr C 1998; Government 1998:2).

Anecdotes abounded of bribery, long waiting lists and poor performance, the "high costs of calls and many lines [that] don't work" (Mr B 1998). Payments are made to corrupt officials to get telephones delivered but the telephones are not delivered or they are delivered and are not connected. "You see a phone doesn't mean it is working" (Ms A 1998). Telephone lines are installed but remain disconnected. It can take months and even years to get a telephone repaired. Telephone accounts are sent out for telephones which are out-of-order or non-existent (Mr C 1998; Mr D 1998).

The problem is that LTC management want to become "fat cats... they want to run it [LTC] into the ground because that is the way they can get the most money in the shortest amount of time" (Mr D 1998). Even some government officials are "fed up with LTC" because of the lack of service (Mr C 1998; Mr E 1998).

In June 1999 in Lesotho there were only 20,000 telephone customers according to an LTC spokesperson. The ratio of telephones in Lesotho is low at 0.75 lines per 100 people far less than the regional average of 3.4 lines per 100 people (Latham & Watkins 1997:2; Ministry 1997:165). The very low figure exists despite the demand for telephones in Lesotho that is evident in the rapid growth in the number of cellphone users amongst the local population. This cellphone growth is despite the higher prices of cellphones and call charges. But people are prepared to pay higher costs because cellphones give a more reliable and a functioning

service (Kerf & Smith 1996:22).

The distribution of telephones is uneven nationally in Lesotho. This reflects a worldwide pattern, including in the developed countries, of provision in the urban areas and lack of provision in the rural areas.

Distribution of telephones in Lesotho	
Place	No. of telephone lines per 100 people
Maseru	13.7
Other urban areas	7.7
Rural lowlands	0.7
Rural highlands	0.4
Senqu River Valley	0.5
Average for all rural areas	0.4

Source: Bureau 1994:10

There is almost a total lack of any public service in the form of public telephones at 0.014 public telephones per 100 people. Contrast this with the number of cellphone users at 0.12 cellular phones per 100 people (BMI-TechKnowledge 1998:128).

While most telecommunication companies make money through telephone call charges and therefore want to install telephones, "LTC have really done everything in their power to hamper the ability of people to make calls" by not installing telephones (Mr D 1999). An example of the need for telephone lines is the fact that the Roma exchange is saturated yet LTC will not provide more lines although this would mean more revenue for LTC (Mr D 1999).

Faced with a "difficult situation" in LTC, some government officials turned to SADC for assistance in 1997 (Mr C 1998). SADC had received financial assistance from the United States Agency for International Development (USAID) and the Australian Agency for International Development (AusAID) which it was able to use to assist Lesotho. It was agreed that a USAID representative and a telecommunications expert would visit Lesotho for three weeks in September 1997. Mr C²⁰ had previously worked for international agencies such as the International Telecommunications Union (ITU) and had the experience of assisting in the development and promotion of telecommunications and the Internet in rural East Asia.

What had initially been understood by Mr C to be a simple task of recruiting a new Managing Director for LTC turned out to be far more complicated and the strategy of simply replacing the Managing Director would have been "simply good money after bad" (Mr C 1998).

Although there were earlier reports on the situation at LTC nothing had been done. In 1996 Bohlin and Stromberg submitted a report on the poor state of LTC but no action was taken. In June 1997 the Ministry of Finance submitted a report titled, Recommended Course of Action for Lesotho Telecommunications Corporation and again no action was taken (Latham & Watkins 1997:2).

With Mr C driving the process there was hope that there would be action. He decided that a consolidated plan for the whole telecommunications sector is needed to restructure the whole

²⁰ Mr C left Lesotho just before the South African invasion.

industry and not only LTC because the telecommunications sector is sliding backwards.

"Lesotho is the only country in the world where there are fewer phones than a few years ago"

(Mr C 1998).

Mr C was appointed to the post as policy giving him the necessary authority. His position entailed acting in an advisory capacity on the preparation of a Telecommunications White Paper, drafting the new Telecommunications Act for Lesotho, the privatisation of LTC, the question of the Internet, and the establishment of a separate regulatory authority for the sector. The regulatory authority would be called the Lesotho Telecommunications Regulatory Authority (LTRA) and would be independent of the Ministry of Telecommunications. The regulatory authority issues licences and determines tariffs, pricing controls, quality of service of licensees, cross border radio frequency issues and the importing or manufacturing of apparatus (Mr C 1998).

Independently of Mr C in October 1997 the Southern African Transport and Communications Commission (SATCC) submitted its report titled Report and Recommendations for the Telecommunications Sector of the Kingdom of Lesotho. This report recommends urgent implementation of a series of actions to reform and restructure the sector. In October 1997 meetings were held with the Ministry, LTC, other government officials and Mr C. These meetings concluded with the agreement that reform in the telecommunications sector including a regulatory authority separate from LTC and the Ministry was crucial. Reform includes modernising the network and attracting investment and economic growth (Latham & Watkins 1997:3).

The USAID representative, agreed by SADC, contracted Latham and Watkins to draft a telecommunications act, on which as part of his brief Mr C acted as adviser. In October 1997 Latham and Watkins finished the Draft Lesotho Telecommunications Act 1997. The draft, which provides a comprehensive telecommunications sector reform law, describes the "serious financial and organisational problems and poor overall performance" of LTC (Latham & Watkins 1997:2). The Draft Act attempts to be as inclusive as possible of various stakeholders. It has four aims that are those found in the SATCC document. First, to establish an independent regulatory authority (LTRA), separate from LTC and the Ministry. Second, to expand and improve the existing network. Third, to attract new investors in the industry. Fourth, to restructure and privatise LTC (Mr C 1998; Latham & Watkins 1997:3).

LTC has complete control of provision, or lack of provision, of telecommunication services. The 1979 Lesotho Telecommunication Act states that LTC has "the exclusive privilege of establishing, maintaining and working telecommunications". This includes administering, licensing, control of frequencies, research, and representing the Lesotho government on telecommunications internationally (Government 1979:51).

In other words LTC has the discretion to say who can or cannot have a telephone and what can or cannot be done on a telephone. For example, if a fax machine is required it is not possible to buy a fax machine and plug it into the telephone line, "You just can't. You aren't allowed to" (Mr D 1999). LTC sold licenses to vendors who sold fax machines provided LTC could test the fax machine first to approve it. The problem is that LTC has no means of testing

the fax machines. But LTC still insisted that a sum of R50 was paid for testing the fax machine that could not be tested (Mr D 1999).

It is this stranglehold and bureaucratic ineptness that Mr C tried to change through the draft Telecommunications Act because LTC's powers are diminished and more decisions come under an independent regulatory authority. However according to Mr C, LTC will not change. Therefore he maintains that the only option to break LTC's monopoly is through privatisation and opening the industry to a second national service provider. This will encourage competition of basic services to ensure efficient, affordable delivery of service (Mr C 1998; Government 1998:8, 11).

The consolidated strategic plan for the telecommunications sector, which Mr C advised on, is called the Telecommunications Sector Restructuring Strategy. It was completed in April 1998. Although only a draft, it has official status as the named author is the Ministry of Transport, Posts and Telecommunications. The draft identifies in the telecommunications sector "major gaps in the coverage of the national service, huge backlogs of unsatisfied demand and long delays in provision of service even in Maseru and other served areas. Rural services were virtually non-existent" (Kingdom 1998:3-4).

In May 1998 the Southern African Transport Communications SATCC) completed the Proposed Telecommunications Policies for SADC and The Model Telecommunications Bill to be submitted to the June SADC meeting for adoption by all SADC countries, including Lesotho. These policy documents were to be adopted as annexes to the SADC Protocol on

Transport, Communications and Meteorology. In this document telecommunications were identified as a "critical catalyst and facilitator" for socio-economic development (SATCC 1998:2).

However LTC remained unaffected by these reports and drafts. Mr C sympathised with Mr E, who had inherited a situation which was "virtually impossible to change...he is virtually impotent" because of all the problems (Mr C 1998). For Mr C the only solution to the very difficult situation in LTC is privatisation, but it should not be understood to be a quick and easy solution. Privatisation²¹, liberalisation and deregulation need to be understood as part of the "new rules of globalization" (UNDP 1999:57). At best short-term monetary gains are possible but these are unlikely in Lesotho because the money is not being set aside for social development. Profits are still made at the inevitable expense of workers who are made redundant and there are no long-term benefits for the state (except through taxes).

In 1995 Lesotho established a Privatisation Unit and passed the Privatisation Act which applies to all parastatals. However there is no clause to ensure that the assets from the privatisation sales will be used for socio-economic development. Instead money from privatisation sales goes into a Special Treasury Privatisation Account and a Special Privatisation Fund Account which may be drawn on for capitalists to "promote private sector

²¹ The World Bank is playing an instrumental role in driving the privatisation process in Lesotho. At least 50 companies are targeted for privatisation and most bidders are foreign companies (Mothibeli 1999). Lesotho Airways, Lesotho Flour Mills and Lesotho Bank are privatised. Privatisation plans include Lesotho Electricity Corporation (LEC), Lesotho Telecommunications Corporation (LTC), the Maloti Highlands Abattoir and hatcheries, veterinary practices, seed and livestock breeding services and tourist sites (Government 1995:22, 35-36, 165-166; EIU 1998:58; EIU 1999:31).

development" (Privatisation 1995:838, 861; UNDP 1997c:54).

A great deal of pressure is being exerted by the World Bank to ensure that privatisation of LTC takes place. The initial date the World Bank set was June 1999. Mr C thought that privatisation of LTC would probably be a sale of 30 percent but this has been increased to 70 percent (Bailey 2000; Mr C 1998). Privatisation of LTC is said to be necessary for two reasons. First, there is chronic degeneration within LTC as a company. Second, huge capital outlays are needed for developing Lesotho's telecommunications infrastructure. Lesotho's government is too poor to fund this expensive infrastructure and foreign private investment is needed. In Lesotho an estimated M289 million is needed for the ratio of teledensity to increase to 3 telephones per 100 people (Government 1998:3, 7).

It is said that there are opportunities for Lesotho to "leapfrog the developed world" because of the rapid developments in information and communications technology. With these developments it is possible for the whole of Lesotho including remote highland areas to receive low cost, reliable and good quality services (Government 1998:3).

A variety of different technologies need to be considered in Lesotho depending on whether it is an urban or rural area, in the lowlands or highlands. Information and communications technology is developing so rapidly that costs should not be a barrier for development. A national cellular and wireless network is needed, for example, Digital Subscriber Loop (DSL) and Wireless Local Loop (WLL). Satellite systems are required, for example, Very Small Aperture Terminals (VSAT), Low Earth Orbiting satellites (LEOs), such as Motorola's

Iridium²² and Globalstar, and Global Mobile Personal Communications by Satellite (GMPCS) that cross borders without local correspondents (Mr C 1998; Government 1998:3, 18,20). At Africa Telecom '98 the call costs given from LEOs were R0.10 per minute (Africa Telecom '98 1998h). Bill Gates is experimenting with even lower orbiting small satellites such as Teledesic costing \$1,000 and these costs will decrease. Teledesic is described as "putting computer terminals in the sky" (Phones 1997:34).

But the problem is that even if it is affordable with LTC in control it will not be provided because of corruption and incompetence. It was said that even if Bill Gates, owner of Microsoft, wants to operate in Lesotho it will not be possible because "Gates can't operate commercially until he gets a licence. To get the licence he would have to, 'sweeten' LTC" (Mr C 1998)²³. In a short period, over 12-18 months, 90 percent of Lesotho could be covered by telecommunications and Internet access. However the Lesotho telecommunications sector is lagging far behind (Mr C 1998; Government 1998:17).

The idea of "leapfrog" technology is not new in Lesotho and therefore should be treated with some caution according to Mr E. In the 1980s Lesotho had more sophisticated

²² Iridium and ICO Global Communications satellite companies have run into problems e.g. Iridium had massive debts because of its small number of subscribers, extremely expensive cellphones the size of a brick and very high charges (Stones 1999a).

²³ The question of licensing Internet service providers is complex. And from contributions by the World Bank and International Telecommunications Union (ITU) staff in an e-mail discussion on licensing there is concern that there will be legal and regulatory changes with the privatisation of LTC and possibly anti-trust laws might be more appropriate. However there is the argument that statistics of licences to Internet service providers etc. contribute to understanding the size of the Internet. This is important because "a growing number of governments are encouraging the development of the 'Information Society'" (Mr C 1998c).

telecommunication equipment than South Africa. But the problem was maintenance from Sweden costing M1 million a year to repair the equipment (Mr E 1998). In 1984/85 the satellite earth station at Ha Sofonia and national and international digital gateway exchange were installed. Microwave radio links the main Lesotho towns. In 1998 the installation of the Martis System for the provision of digital leased circuits was complete (LTC 1998). There is digital cabling between Maseru and Mohale and Thaba-Tseka with very good lines. The problem though is the management of the lines by LTC which "is a nightmare" (Mr D 1999).

Lesotho lacks skilled telecommunications workers or experts and trained information and communications technology workers. The problem was that, "you take someone for training in another country and the minute they can do something they stay there. There is no manpower in rural areas" (Ms A 1998).

Mr E suggested that the African Advanced Level Telecommunications Institute (AFRALTI) could be approached on policy and for training personnel. Possibly Lesotho could be part of a M24 million project sponsored by ITU, Nortel Networks and the Acacia Initiative because training costs are high at M10.5 million and a further M14 million for experts and consultants (Government 1995:94; Mr E 1998).

Mr E is "very supportive" of LTC's privatisation (Mr E 1998). Although there is support for LTC's privatisation to solve the on-going problems in the telecommunications sector a concern is, "I don't know what privatisation will bring to LTC. LTC might privatise and things go down. Then people's confidence will go down" (Mr F 1999).

Privatisation did not take place by the World Bank's proposed date of June 1999 and now the earliest possible date given is March 2001 (Bailey 2000). The draft Telecommunications Act was supposed to become law by September or October 1998 and an independent regulator installed. But this did not happen. The Telecommunications Act simply disappeared which some thought was for the best because a concern was that it would bring restrictions (Mr G 1999; Mr D 1999).

During this period of LTC's "imminent privatisation" (i.e. since 1997 and until the final privatisation date possibly 2001) LTC is receiving no government subsidy. The reason given is that money from the government will influence the privatisation strategy. However borrowing money is not possible because guarantees need to be given by the parent body, which is the Lesotho government, that this money will be repaid, but the government is not prepared to do this because of LTC's privatisation plans. Lack of money has placed LTC in an extremely difficult position with its annual debt of M3 million (Mr E 1998).

Because of the privatisation plans even appraisals of projects by the African Development Bank have been suspended by the Ministries of Central Planning and Transcomms. What LTC is questioning is whether the government wants LTC under receivership (LTC 1998?; Mr E 1998). However from outside LTC there is no concern that LTC is not receiving money the money would be misspent, "LTC from the top down is rotten" (Mr D 1999).

2.2 Vodacom Lesotho (VCL)

With LTC in a poor state cellular services have outgrown fixed line services. Vodacom Lesotho (VCL) is Lesotho's only cellphone service provider. It is growing very rapidly at 4 percent a day confirming the demand for telecommunications in Lesotho. "You can say that Vodacom brought development to Lesotho" (Ms H 1999).

VCL started in 1996 as a joint venture between LTC and the South African company Vodacom to provide cellular telephone services. It is regarded as a subsidiary of LTC (Kingdom 1998:3; Mr E 1998).

There is an interesting history to the joint agreement between LTC and Vodacom. The outlay LTC had to pay for Vodacom was M9.8 million and any delays would be in breach of contract. Therefore acquiring money was urgent. A financial audit showed that LTC did not have any money. However the ex-Managing Director realised that there was money in LTC's reserves, which consist of deductions from staff salaries to pay burial costs, insurance etc. So the previous Managing Director, described [perhaps ironically] as "poor guy, not unscrupulous", simply emptied the reserves to pay Vodacom on time (Mr E 1998).

LTC workers became aware that there was no money in the reserves to pay any benefits. This knowledge of the theft of their money by the ex-Managing Director gave the workers the "upper hand" in a long on-going labour dispute. This dispute started in the early 1990s and peaked in the mid-1990s with a court case in which workers were dismissed. However, with the knowledge that the workers had of the theft of their money, towards the end of 1998 the

case was settled on appeal in favour of the workers. The judge determined that it was a lockout not a strike. All 314 dismissed workers were reinstated, the Managing Director fined M10,000, LTC fined M50,000, and the workers paid in arrears for the last ten months. An appeal against the court decision by LTC was dismissed (Mr C 1998; Mr E 1998).

The theft of the reserves ensured that LTC found the money to pay Vodacom the M9.8 million. The ex-Managing Director of LTC then left LTC to work for Vodacom in South Africa. Other LTC top managers also moved to VCL where they are highly paid (Mr E 1998).

VCL offers wireless services with both local and international links. It has grown rapidly from about 2,500 customers in 1998 to over 8,000 customers in 1999 with the potential for increased expansion. Compare this to the slow growth in LTC. In 1991 LTC had 13,406 telephone customers and eight years later this had only risen to 20,000 (Government 1994:ix).

Although the costs of a cellphone and the call charges are "a bit more expensive" than LTC, the major difference and attraction of VCL is that it is reliable and convenient. It is used in some of the rural areas although not the very small remote highland villages because they are not covered by the VCL network. However in the highlands there are VCL connections at Katse Dam and Mohale Dam (Ms H 1999).

Ms H described the potential of telecommunications for development by a photograph, that she had seen of a shepherd with a cellphone. The problem is that in Lesotho there is "so much talent but no money" (Ms H 1999).



Source: Business Day 1999

About two weeks after meeting her I came across the same photograph in the Business Day June 17, 1999. Strangely the photograph was used to illustrate an article on cellphone radiation with the caption, "Cellphone technology has reached all walks of life" (Stones 1999c).

VCL has broadband width to South Africa and Internet access is possible. Broadband enables fast Internet access - transmission and downloading of large Internet files - quickly and

therefore cheaply. But VCL is not providing Internet services, or Yebo!Net, in Lesotho (Ms H 1999).

A possible scenario Mr C suggests for the restructuring of the telecommunications industry is that LTC provides land based services and VCL wireless. But cellphone competition is needed to end VCL's monopoly and a second cellular licence from 2001 is under consideration (Motseta 2000). Enhanced, or value added services, such as the Internet, would also be permitted. The draft Telecommunications Act suggests a three year exclusivity period to ensure the objective of universal service and access (Mr C 1998; Kingdom 1998:8; Latham & Watkins 1997:4).

2.3 Universal service and access

One of the goals of LTC is for telecommunications and the Internet to "reach the entire country and internationally - the global village. Don't forget people in rural areas" (Mr E 1998). The provision of universal service and access, which is efficient and affordable, is the most important aim of telecommunications policy and legislation (SATCC 1998:40).

The goal of LTC was that by the year 2000 for teledensity penetration to be maximum 10 kilometre walking distance to the nearest telephone (Government 1995:91). This goal has not been reached. A longer term objective is to bring everyone within 5 kilometres of a telephone although a "good idea, but are we getting there? I really hope we get there" (Mr E 1998).

There is general concern that telecommunications must be provided in the highlands and

eastern border because

"the country is two different worlds. There are the highlands that are inaccessible and the lowlands like other countries. No business will be given to the rural areas if the government pulls out. And the small eastern towns need subsidisation" (Mr E 1998).

However, it has been questioned whether LTC, which has the licence to provide basic services throughout Lesotho, is the best choice for remote telecommunications (Latham & Watkins 1997:4).

Telecommunications, which are suitable, reliable, and affordable, are critical for socio-economic development. They are needed for the basic running and administration of the country, for commerce, education, health and for links to other countries. However for social and economic development in Lesotho a "massive improvement in the quality and quantity of national telecommunications services" is needed (Kingdom 1998:2). An example of the handicap of poor telecommunications was in the Department of Health. For the last five years there had been money in the department that was not being used in hospitals or clinics because they lacked the right equipment - telephones (Mr C 1998).

The LHWP required an advanced infrastructure for the project to be possible. Access roads for motor vehicles were built making accessible remote highland villages that were previously only accessible by donkeys or horses. However regarding the telecommunication infrastructure LTC was considered to be so deficient that LHWP did not use LTC at the dams. A LHWP spokesperson pointed out, "Oh no, not LTC, taken too long". Instead of LTC, LHWP sub-contracted out and set up their own switchboard (Mr C 1998, LHWP 1992:1534; Mr D 1999).

However there are no benefits in the rural villages from the electricity and telephone lines which bypass them and the power cables usually passing directly above them. LHWP proposed a wide range of rural social and economic development programmes²⁴ yet had failed to deliver preferring only to words to action. But a noticeable gap even in the proposal is telecommunications (LHWP 1992:1536).

The perception in the rural areas is that only urban areas benefit and not the villages from electricity or telecommunications encouraging vandalism of these installations by herdboys or shepherds (Thabane 1994:64). However, if affordable, reliable and good quality information and communications technology is available in the rural areas this could change.

Telephone calls are very expensive in Lesotho (World Bank 1995:75). Electricity, water and telecommunication service rates are "substantially higher" than in South Africa (Government 1997:131). The high telephone call costs means that fax and Internet use are expensive but the response was that, "they should have complained years ago. LTC hasn't raised for the last five years the charges... although maybe LTC should come up with a bit more competitive pricing" (Mr E 1998).

High costs of telephone calls are a problem for social and economic development. In developing countries call costs are higher than developed countries. In Lesotho this is because

²⁴ The programmes included, "Livestock and Range Management, Horticulture, Forestry, Fisheries, Participatory Land Use Planning, Trout Production, Water Supply, Sanitation, Rural Electrification, Tourism, Rural Roads, Cross Reservoir Transport, Rural Training, Income Generation and Construction Communities (LHWP 1992:1536).

the service is under-utilised. Even in peak periods 90 percent of possible traffic is not used. Costs of international calls are only 1c a minute and the rest of the cost is administration, carriers and marketing. Call costs "must come down. At present there is also not maximum utilization of the telecommunications network and the Internet should improve this" (Mr C 1998).

Mr C is "very supportive" of spending money on telecommunications and the Internet. He disagrees with the argument that "they don't want telecommunications in rural areas" or that education and health are more urgent priorities. Telecommunications and the Internet "enhances the quality of life in the rural areas" as he had seen in Thailand. There is already a demand in Lesotho for the Internet and Internet use in the schools and aid posts in villages would escalate rapidly (Mr C 1998).

There are similarities between the Lesotho highlands and Thailand's north-eastern rural villages according to Mr C. In Thailand the remote villages are benefiting from telecommunications and Internet access. Similarly remote Lesotho villages could benefit because they could communicate cheaply and quickly using reliable and efficient telecommunications and Internet access between villages and between the rural and urban areas (Mr C 1998).

"The prohibitive cost of information in developing countries like Lesotho means that it has to be treated like a public good" (Molapo 1998:12). This means that information has to be made available as widely as possible at the cheapest cost and this would be possible in Lesotho over

the Internet according to Mr C (1998). The idea of the Internet as an "on-line library is an excellent idea" (Mr G 1999). He gave the example that if mielie crops are struck by diseases the Internet could show pictures of diseased crops which would help farmers identify diseases²⁵ (Mr G 1999).

If there is development and a decent quality of life in the rural areas this could stem the growing migration to the urban areas that lack the necessary infrastructure to cope with the increasing numbers of destitute and unemployed. Increasingly there is permanent structural unemployment amongst the young Basotho because there are fewer jobs on the South African mines and the rural areas do not provide a living. In the highlands telephones and the Internet might change the flow of labour and a movement could develop from the urban areas to the rural highlands. Non-governmental organisations (NGOs), who work in the rural areas could operate successfully there, provide training, and tourism could develop (Mr C 1998; Government 1998:5).

In Lesotho there are two government newspapers and about six independent newspapers, a wire service a broadcasting service including radio and television, and a postal service (Government 1996:74, 161-165). There are also two library services - the Lesotho Government Archives and the Lesotho National Library Service (World 2000).

The potential of information and communications technology means that it should be,

²⁵ South African farming organisations are trying to get all 50,000 farmers onto the Internet. Farmers were warned by the South African Agricultural Union president, Chris du Toit, that "without the right information technology [farmers] would drop out of farming in the next century" (Cook 1999).

"the goal that every citizen should have ready access to a telephone, the internet, broadcasting services and a postal address. Technology is the new revolution facing this continent. On its development rests the development necessary to fuel Africa's growth" (Telecoms 1999).

Inclusion of every citizen in Lesotho means the inclusion of the rural areas and the shepherds in accessing information and communication technologies. Mr I rejected the use of the Internet in the rural areas, by shepherds and by the illiterate,

"How can a shepherd use the Internet? How can an illiterate man use the Internet? What is someone illiterate going to do with the Internet? Not value for money. It must make business sense and this does not make business sense. Otherwise subsidising a service which is not needed if the costs are higher than the returns" (Mr I 1998).

However, Mr J disagreed with Mr I about the Internet not having value in the rural areas because, "There aren't only shepherds in rural areas" (Mr I 1998). Similarly Mr C said that it was "not for the average shepherd but for youth and aid-post workers" (Mr C 1998).

The arguments for exclusion of the illiterate and concern of high costs of service provision to rural areas are common. First, the argument based on high costs and lack of profits in rural information and communications technology service provision is based on the capitalist profit motive of "business sense" instead of people's needs. This position excludes the majority of the Basotho population and is therefore elitist and goes against the idea of universal service and access. Second, the argument about illiteracy is usually presented as "common sense". But there is a right to have access to information and to be able to communicate and therefore to technology used for this purpose either directly or to benefit indirectly from the Internet. The Internet can be used to develop literacy by using voice-based programs and touch screens. But research into these areas will be limited if based on provision to the rural areas or illiterate because these are not profitable areas. However with the growing use of cellphone Internet

access and use of voice-based programs this could speed up research. Both arguments on the rural areas and illiterate encourage an increasing digital divide and the exclusion of whole communities from any benefits of the information society.

3 The Internet

3.1 From “illegality” to legality

Until 1999 the Internet was considered “illegal” in Lesotho because LTC regarded the use of the Internet as "not legal" based on LTC's exclusive control of telecommunications in the Telecommunication Act 1979 (Government 1979:50-71; Mr E 1998). Telecommunications are essential for providing the Internet and if the Internet was not to be used on LTC lines the Internet was “illegal”. Even though Mr E recognises that there is a demand for the Internet, first a policy is needed and, "once the policy is up and running people can come out of hiding". Considering that LTC had such a rigid stance it is ironic and an anomaly that Mr C had Internet access. But a blind eye was turned because the Internet was critical for his work because it required easy, fast access to current information and reliable, regular communication internationally. Without the Internet his job would have proved impossible (Mr C 1998).

However Mr E was not prepared to stop the Internet even if “illegal” because of its value in providing access to information and knowledge that was not previously available in Lesotho but was available in the developed countries. Therefore the Internet acts as an equaliser making the same information accessible to anyone worldwide. Lesotho through the Internet would have access of information for development, "it's a question of a person in New York,

Washington or Lesotho having access to the same information. They've a right to have access to information, to knowledge, so don't stop it if it's illegal" (Mr E 1998).

Despite Mr E's personal views LTC continued to bureaucratically obstruct the development of the Internet even though Internet development was recommended in the draft Telecommunications Act 1997. The draft recommends that value-added services, such as the Internet, should not be regulated. This is because these services are not telecommunication services although the underlying technology is telecommunications (Latham & Watkins 1997:5, 26-27).

However LTC's decisions to obstruct Internet development seem to be based on a document produced by an AFRALTI expert for the LTC, titled Draft Policy on Internet for the Kingdom of Lesotho, in which the effects of the Internet are suggested to have "drastic social and economic consequences. For this reason, Lesotho intends to harness this technology for the benefit of all Basotho and the business community" (Draft 1998:1). In other words "harness" means managing and controlling the Internet (Draft 1998:3).

Instead of providing the Basotho with the advantages of the Internet listed such as tele-medicine, education, international news and cheap telephone calls, LTC's aim is to bureaucratically control the Internet based on fear and the perceived disadvantages of the Internet. The Internet is a "threat to cultural and national security", it has "objectionable material like pornography, propaganda", because of the lack of local content it has "biased global electronic commerce and trade information", because of the possibilities of cheap calls

including voice it is a "threat to the telecommunications organisations", and over the Internet there are "many examples of crime...fraud and impersonation" (Draft 1998:1-3).

The government and LTC's adverse perception of the Internet is generally acknowledged:

"The Internet's created very negative publicity in government. There's a fear of hackers. They'll never connect to the Internet because of hackers. It's not a fear of pornography. A major concern is an invasion of the system. There'll only be single dial-ups and no networks in government which will not change in the short term" (Mr G 1999).

Workshops were held to inform government ministers about the Internet "but the effects were negligible" (Mr G 1999; Mr D 1999).

Although Mr C is convinced that LTC and the government will come under increasing pressure to make Internet services available he is not "super confident that the government will do a lot" (Mr C 1998). His optimism is partly because there is strong support for the Internet from what might be considered to be an unlikely source, Mr E, who recognises the importance of the Internet to be "very prospective. It's overdue. It's a network around the world with up-to-date information. Without it developing countries will come behind" (Mr E 1998).

3.2 The "advent of the Internet"

The "advent" of the Internet will describe the beginnings of the Internet at three Lesotho based Internet service providers, namely the National University of Lesotho (NUL), Square One and Lesotho Office Equipment (LOE).

To understand the development of the Internet in Lesotho some of the difficulties in service provision need to be explained. LTC uses the 1979 Telecommunications Act to block the development of the Internet by controlling what LTC lines are used for and not allowing the Internet to use LTC lines. However Mr D describes the Telecommunications Act of 1979 as a "bit hazy", a grey area, as it was written before the "advent of the Internet". LTC interpreted the 1979 Act to mean that LTC is able to permit or not permit any function over a telephone line or data line because they wanted complete control over telephone lines (Mr D 1999). Mr G explained that "No, the Internet is not "illegal". But LTC wants to control everything. They thought they could supervise the Internet but they don't have the skills to provide the service" (Mr G 1999). Because LTC lacked the skills Internet service was available through only three Lesotho Internet service providers.

The Internet started at the National University of Lesotho (NUL) based in Roma, about 30km outside Maseru, around 1992 with e-mail access only. In 1992 a domain was registered with Internic to get a ".ls" domain address for Lesotho that was not "illegal" to do according to Mr I. Full Internet access was possible at the end of 1996 (Mr I 1998). However this access seems to have been exceptional.

However the domain name for Lesotho ".ls" was registered privately and therefore the domain address for Lesotho ".ls" is no longer public property but is privately owned and used for personal profits. Therefore there has been "serious conflict" over domain registrations for the other Internet service providers, particularly Square One. If Square One uses ".ls" they pay \$100 per annum. LOE manages the address ".co.ls", i.e. only for companies ("co") in Lesotho.

If Square One uses ".co.ls" then LOE is paid R500 per annum. Square One is able to register companies as ".com" or organisations as ".org". But these domain addresses are expensive and the cost of an address ".com" is M5000 per annum and for ".org" M1000 for two years (Mr G 1999).

During the time that the Internet was "illegal" in Lesotho curiously the server for NUL was in the computer room at NUL in Roma. This is unlike LOE which had to operate a server from across the border at Ladybrand with calls costing M35 per hour from Maseru but at full international rates from other towns. The only reason Mr I gave for the exception that the server was allowed in Lesotho is that "the government could not say no to us" (Mr C 1998; Mr I 1998).

Mr F thought that for Lesotho it was "important to go full force with the Internet. But telephone bills are very expensive. Yes, it will improve in future. People are becoming more and more aware of these things. Help in schools? Yes, pretty much" (Mr F 1999).

An on-going problem is not only the high cost of calls but the bottleneck of telephone lines as there is dial-up to the Computer Services Unit. It seems impossible to receive additional lines and the Roma switchboard is saturated. According to Mr I, NUL is the biggest customer in Roma yet its requests for more lines are ignored and the excuse given is "equipment is lacking" (Mr I 1998).

A similar problem exists for LOE because 30 lines are needed but LTC has given only 10 lines

that are insufficient for demand. "You've just got to wait. You could phone every single day and still won't have any joy" (Mr D 1999).

A problem for Square One and LOE was to get a digital leased line before 1999 but NUL always had one (Mr G 1999; Mr D 1999; Mr I 1998). The reason for permission being granted to NUL for a leased line is for "academic use" (Mr I 1998). Originally NUL only had a leased line of officially 9,6kb kilobytes per second, although 28,8kb was received from Uninet to the University of the Free State. However this route was changed when Uninet upgraded NUL's line to 64kb to the Council for Scientific and Industrial Research (CSIR) in Pretoria. NUL is paying M15,000 per quarter for the leased line (Mr J 1999; Mr I 1999).

However even though leased lines are now available there are delays and according to Mr G it can take "six months to one year wait". A digital leased line with 64kb bandwidth data capacity and speed) was only installed at Square One in April 1999 between Maseru and Ladybrand after a six month wait (Mr G 1999).

Square One started in about 1991 in Lesotho but only in 1994 was the possibility of an Internet service explored. "The whole world is changing techno-wise as far as the Internet is concerned...For the whole country might mean a whole lot more than one can imagine" (Mr G 1999).

Radio digital microwave is used by Square One. There is a temporary link from Ladybrand to Maseru of 2Mb megabytes per second. Ladybrand is monitored from Maseru and Square One

has their own radio mast in Maseru of 2Mb that can be upgraded to 10Mb. This covers a 10km radius that is adequate because 90 percent of Square One's Internet users are in Maseru. There is a digital line between Ladybrand and Johannesburg. In Ladybrand there are five telephone lines and in Maseru six telephone lines which is sufficient for the number of customers. As long as Square One continues only to use radio microwave for the Internet "then LTC is happy" (Mr G 1999).

According to Mr D, in 1998 when Square One first provided Internet services it was "illegal" in Lesotho. Square One had a digital line from Maseru to Ladybrand installed and applied successfully for a licence to transmit that signal by radio. They also got a licence in Lesotho to transmit data by radio. This was legal but Square One installed a repeater in Lesotho and transmitted from Ladybrand to Maseru and from Maseru to Ladybrand which was "illegal". They had a licence in Ladybrand and Maseru but no licence across the border. Beaming the signal across the border into Lesotho and distributing it in Lesotho was "illegal" until 1999 (Mr D 1999).

Square One might have experienced difficulties with LTC in becoming an Internet service provider but these difficulties are few compared with the problems between LOE and LTC. Although LOE requested an ISP licence from LTC a number of times it met with great opposition. LOE is based in Maseru but because Internet Service Providers were "illegal" in Lesotho before 1999 LOE's Internet server was based over the border at Ladybrand in South Africa (Mr D 1998; Mr B 1998).

LOE started in 1996. LOE approached LTC to set up an ISP in Lesotho. According to Mr D, LTC replied, "no problem at all" (Mr D 1999). However, Mr E's version is that LOE applied for a service but did not stipulate that they were intending to use the Internet (Mr E 1998).

LOE paid LTC about R10,000 for digital lines and the cable installation. Despite payment, the work was never carried out, "then nothing. Nothing was heard from them" (Mr D 1999). As a result of these problems because LTC took the money without providing a service, LOE went to a solicitor. "There's so much corruption. You get things done by bribery!" said Mr B (1998).

But the solicitor made no difference to LTC who "just delayed and delayed" and as a result a court case was pending because "LTC didn't understand it [Internet] and therefore they just said, 'No'. They just put their heads in the ground and said, 'No, we don't want it in Lesotho'" (Mr D 1999).

In March 1998 LOE was called in by the Ministry of Transport and Communications for a meeting with the Principal Secretary. The purpose of the meeting was to find out from LOE why there was no Internet in Lesotho. Recalling the meeting Mr D said that the Ministry asked the reason why LOE was in South Africa operating from Ladybrand. Mr D replied, "You can't have it [Internet] here" (Mr D 1999). LTC were then called to that meeting and LTC explained that it was not at fault but that, "No, the ministry said that they can't put the Internet into Lesotho" (Mr D 1999). To this allegation the Ministry replied, "We didn't say that at all. You must go ahead and do it". LTC was "ordered in no uncertain terms that they

must go ahead and provide the Internet" (Mr D 1999).

In June 1998 it was agreed that LTC would come up with an Internet agreement. They would charge LOE a licence to become an Internet Service Provider. This included a joining fee of M10,000 and a year's subscription which amounted to M10,000. M20,000 for a licence was "ridiculous. Nowhere in the world do they do this" (Mr D 1999). Therefore LOE paid LTC M20,000 and expected a licence. However no licence was forthcoming despite having paid for it and LOE was told that "they were conditional licences" (Mr D 1999). Mr D asked why LTC took LOE's money but gave no licence and was told that, "We have to take the money if you want to have your line installed" (Mr D 1999). To further questions about the lack of the licences although the money had been paid LOE received the reply that LTC "cannot issue a licence" (Mr D 1999). And the reason given was that the Internet had not been approved by the government and the government had not told LTC to provide Internet access. As Mr D said this "was a lot of nonsense because we were in the meetings where it was discussed and the Principal Secretary said, 'You must provide it. You must provide it'" (Mr D 1999). The Principal Secretary was also on the LTC board therefore issues discussed at the Ministry meeting should have been brought up at a board meeting (Mr D 1999).

Towards the end of June 1998 there was a final meeting between the government, LOE and LTC. At this meeting LTC said, "Fine, we'll make the service available to you" (Mr D 1999). However nothing was done and Mr D approached LTC and said, "We've got the go ahead now why are you stalling on the line?" (Mr D 1999). The reply he received was, "You must drop the court case first" (Mr D 1999). LOE dropped the pending court case but, "it was a lie.

It was just a stalling tactic" and no line was installed once the court case was dropped (Mr D 1999).

Eventually in January 1999 a 128kb digital line, a "spaghetti junction of cable", clearly visible hanging outside LOE, was installed between Ladybrand and Maseru. However LOE still had no licence although it had been paid for because "if you make waves you don't know what will happen" (Mr D 1999).

It is said that privatisation of LTC will "speed up development very, very efficiently" (Mr G 1999). The present situation with LTC meant that LOE has reached its limit and is no longer able to expand in Lesotho. It is forced to turn to South Africa for more business and has expanded into Maputo in Mozambique. If LTC is privatised according to Mr D the Internet will "blossom. We will set up centres throughout the country. We will have more direct links. Then the whole thing [Internet] will blossom" (Mr D 1999).

3.2 Included or excluded - the digital divide

Who has Internet access in Lesotho? Who are the haves and the have-nots, the included and the excluded?

"The world is moving to greater distances between haves and have-nots. Information haves and have-nots are part of this bigger gap. Cross-subsidisation of poorer countries may change it. The fundamental laws are the rich are getting richer and the poor poorer" (Mr C 1998).

The Internet in Lesotho as it is only "starting to take off now. Yes, it definitely has potential" (Mr G 1999). In Lesotho there are about 2,600 Internet users and about the same number of

people with access to computers. However it will be shown that the pattern of the small number of Lesotho Internet users follows a worldwide pattern of users being mainly urban and not rural based, having higher education levels and higher incomes. An elite group excluding the majority and increasing the digital divide between the haves and the have-nots.

Access to the Internet for those who are urban based and are better educated is evident in the fact that the academic and administrative staff and some students at the National University of Lesotho, including satellite campuses, such as the Institute of Extra Mural Studies (IEM) in Maseru, have Internet access²⁶. The policy is that all students will have Internet access. In 1999 there were 450-500 e-mail addresses - an indication of the number of Internet users. Furthermore most staff and students had been connected for a relatively short time since mid-1998 in spite of the Internet being available since 1996 and e-mail from 1992 (Mr I 1999).

Problems encountered by Internet users are that the server is frequently down and software does not work. Therefore e-mail is not a quick reliable means of communication and using the Internet for research can be problematic because of speed and lack of training²⁷. Staff are also expected to solve technical problems and do not receive sufficient support from the Computer Services Unit. The perception is that the best facilities are given to those who do not put them to best use such as the Vice-Chancellor and Registrar.

²⁶ As all faculties of the National University of Lesotho are to have Internet access the National Health Training Centre in Maseru will be connected once it becomes a faculty of NUL (Mr I 1998).

²⁷ In 1998 the Academic Development Centre had 21 computers for student training. But the expectation is that the centre must give academic and administrative staff training and the Computer Services Unit will only give technical support (Mr I 1998).

Internet access at NUL is free. This is a major advantage compared with the commercial Internet service providers. At Square One individual subscriber fees are M80 per month and payment for one year gets a two months discount. For networks the charge is M500 per month (Mr G 1999). At LOE the cost of Internet service is M900 per year (Mr D 1999).

In 1999 Square One had 100 users, 90 percent of whom live in Maseru i.e. based in the capital of Lesotho. Square One's users are higher paid, more educated and urban-based. Non-governmental organisations (NGOs) constitute about 45 percent of Square One's users and could be "the flagship to change ideas" towards the Internet in Lesotho (Mr G 1999). This is because the Internet "gets to every person in the network. They're [NGOs] very well computerised. If you have access to a computer then you get the Internet" (Mr G 1999). The rest of the users are companies, four of which use a network over radio, expatriates and consultants who use Internet access from home. There seems to be a general perception that all companies use computers and therefore Internet access should be promoted (Mr G 1999; Ms K 1999).

Internet training is given by Square One Computers Internet, a division of Square One to their clients. Most of the Internet users, 60 percent, use the Internet for e-mail, and 40 percent use it for newspapers or current news, and for technical information or downloading of software (Mr G 1999).

In 1999 LOE provided Internet services to over 1,800 subscribers. But this figure does not

reflect accurately the number of users because one organisation with one subscriber could serve 30 users. As with Square One's users LOE's subscribers are more educated and higher paid and generally urban-based. Subscribers are NGOs, businesses, government departments and individuals. LOE is the ISP for the only school in Lesotho with Internet access, Machabeng High School in Maseru – an elite school (Mr D 1999).

LOE's largest customer is the Lesotho Highlands Development Authority (LHDA) with 300 users. LHDA had its switchboard installed by its own company using a laser link. In the highlands the remoteness makes fixed line telecommunications or radio difficult and the only solution is satellite (Mr D 1999).

LHDA "couldn't live without the Internet" (Mr G 1999). The Internet is used for e-mail, project updates, software upgrading, and is a "life-line in these remote areas" (Mr D 1999). Other remote areas with larger centres that have access are Qacha's Nek, Mokhotlong, Thaba-Tseka, Mohale Dam and Katse Dam site (Mr D 1999).

Certain government departments have Internet networks such as the Ministry of Defence from the end of 1998 and since 1999 the Ministry of Tourism, the Ministry of Agriculture and the Department of Energy under pressure from SADC's Natural Resources and National Environment Resources. Other government departments have Internet access but only for the Minister, Principal Secretary or Secretary (Mr D 1999).

The banks have Internet access. At the end of 1996 the Central Bank of Lesotho obtained

access for the computer centre, research, international or foreign exchange, and the governor's office (Mr L 1998). There is a policy that every Central Bank staff member has access to the Internet. However to implement the policy a network is needed. "We're in the age of the Internet. All, or a lot of, information is being passed over the Internet...which is necessary for people to carry on with work and improve jobs" said Mr L. Further as a SADC member the expectation is the ability to communicate by e-mail, read SADC reports electronically and research SADC projects on the Internet (Mr L 1998).

"Definitely yes, the Internet is a tool for development. The advantage is the amount of information, and how quickly you can get the information in your own office. You don't have to go to the library. The information is available at your own desk (Mr L 1998).

3.3 **"Enhance knowledge, information exchange, and communications"**

With the lack of support from the government and LTC for developing the Internet, support might be expected from the international community for Internet connectivity in Lesotho. But support from these international bodies is virtually non-existent. Although the World Bank states that "the Bank is helping African countries to take advantage of the 'information highway' in order to enhance knowledge, information exchange, and communications among African countries and between Africa and the rest of the world" (World Bank 1998?).

However the World Bank is not developing the Internet in Lesotho. Despite the fact that in collaboration with the United Nations and other multilateral developing organisations the World Bank has a programme called, "Internet Connectivity in Africa", which promotes connectivity in only four countries - Malawi, Mozambique, Ghana and Senegal (World Bank

1998?).

The United Nations (UN) through its Development Programme (UNDP) has done little to develop the Internet in Lesotho. This is despite the Regional Bureau for Africa's project, Internet Initiative for Africa, which aims to develop Internet services in 10 sub-Saharan countries including Lesotho. One aim is "to strengthen a market economy and achieving structural transformation" (UNDP 1997d:1). This promotion of "a market economy" is the promotion of globalisation and neo-liberal policies.

Another aim is to use the National Information and Communication Infrastructure (NICI) to "provide the medium for civil society to join the information age" (UNDP 1997d:1) Mr M interpreted this to mean that the Internet "is useful for the question of general management i.e. the ability to access information and to use it as a tool to run the daily operations" (Mr M 1998).

Mr C strongly criticises UNDP in Lesotho. UNDP invited Lesotho to participate in its Internet Country Cooperation Programme that requires the Lesotho government to help fund the project. The amounts expected from the Lesotho government are quite considerable. In the draft UNDP project document infrastructure and testing a leased line over a three year period amounts to \$7,5 million, of which Lesotho pays 10 percent or \$750,000. There is also the training component for installation and maintenance which amounts to \$650,000, of which Lesotho was pays 10 percent or \$65,000. Additional training is required for Internet service providers ISPs) which amounts to \$150,000, of which Lesotho pays \$15,000. The total

expected from Lesotho is \$830,000. Mr C advised the government to "avoid it [UNDP] like the plague" (Mr C 1998).

In 1996 Mr M was sent to Lesotho specifically to organise the Internet. This was in support of the "Internet Initiative in Africa", such as the "Information Technologies for Development Programme", which "seeks to promote awareness, connectivity, capacity-building, content creation, communications and networking" (d'Orville 1999:20). The year he arrived in Lesotho the budget dropped 40% (Mr M 1998).

Mr C is disillusioned with UNDP because they "go for the lowest common denominator" (Mr C 1998). In 1998 UNDP used out-of-date, customised in-house, incompatible software²⁸ which was confirmed by Mr M. Yet UNDP claims specialist knowledge of the Internet and that it is able to provide Lesotho with the Internet. Disillusioned with the project in 1998, Mr M left Lesotho by 1999 (Mr C 1998; Mr M 1998).

In 1998 only four people were connected at UNDP's local Lesotho office because of the "serious technical and reliability limitations" of their in-house software although there were 1,000 immediate possibilities of connections (Creating 1998:4; Mr M 1998). But by 1999 the number connected to the Internet at UNDP had grown to 50 users because of a switch to Netscape which is described as an "Internet revolution in UNDP", by James Gustave Speth,

²⁸ In 1998 UNDP software was using their eight year old, out-dated, in-house software called Higgins. Worldwide 4,000 UNDP staff used Higgins. One problem of Higgins was that there was no real-time information going in or out of New York to anywhere in the world (Mr M 1998).

New York administrator (Creating 1998:4). According to Ms K the policy of UNDP is to ensure that all staff have access to the Internet. "Yes, it [Internet] is a really good tool. One can get a lot of information from the Internet" (Ms K 1999). This information was mainly updates on software and keeping in touch with the head office in New York and not for development information.

Mr M's plans for developing the Internet in Lesotho included creating a Lesotho UNDP Intranet connecting 25 projects. An Intranet could also be used for UNDP meetings that would reduce time and costs. One UNDP project at Thaba-Tseka had Internet access, which "by road is 130 kilometres and can take 5-6 hours and in bad weather you can't even think about it" (Mr M 1998). But "things go so slowly we are nowhere near getting an Intranet" (Mr M 1998).

A number of people in Lesotho understand the Internet and e-mail in particular, not only as a medium of communication but as a form of transport. Travelling in Lesotho, particularly in the highlands, is time-consuming and at times impossible. But the Internet and e-mail are understood to be a form of transport, communication and information (Mr G 1999; Mr M 1998).

During his stay Mr M created a UNDP Lesotho web page, on which is the UNDP's Lesotho country programme giving the UN's plans for the next five years. A possible reflection of UNDP's lack of commitment to the inclusion of Lesotho in the information society is that this document does not mention the Internet at all (Mr M 1998).

As the World Bank and UNDP do not seem able to provide Internet access according to Mr C the United Nations Educational Scientific and Cultural Organisation (UNESCO) and the World Health Organisation (WHO) could be approached. Both have significant sources of funding, both regionally and globally, and possibly these organisations can be used in the development of the Internet (Mr C 1998). However this view of developing the Internet is not shared by either UNESCO or WHO.

UNESCO is very small in Lesotho with few activities according to Ms N. In 1996 UNESCO held a workshop on "Sensitization on computers in education". The aim was to get companies to "Adopt-a-School" and provide a computer but the campaign was never implemented (Phamotse 1996). In mid-1998 e-mail had been installed only for the Secretary General. This is in spite of promises from the Director General of UNESCO in Paris that all National Commissions would be connected as part of connectivity programme to the Internet. The problem regarding Internet connectivity Ms N said is that one "may wait and something will not happen" (Ms N 1998).

Similarly at WHO it is the top, the director, who had access to the Internet since 1998. It is used only for e-mail and to keep in contact with WHO offices outside Lesotho and not as a source of information on health to provide for development in Lesotho. Although other staff had computers they did not have access to e-mail or the Internet (Ms A 1998).

"The utilization of the e-mail line as it is, is a waste if it is only for one person and not for all. Utilization must mean that bottom gets it not just top. Secretaries must be able to use e-mail and access messages when Programme Officers are away. It always happens the top gets everything. It's a question of power. Information is power. She [The director] can

come to meetings with information that anyone could get. She could send information and e-mails in her office without calling a meeting if e-mail and the Internet are used. Look at the walls which are smooth but things are not smooth" (Ms A 1998).

3.4 **"People are technology hungry"**

"People are technology hungry" in Lesotho (Mr B1998). As an experiment before opening the Internet Café in Maseru for two weeks a computer was set up in LOE's office with free access for anyone who wanted to use it. The computer was heavily used. Young people were very enthusiastic and would come in with specific needs and queries using the Internet as an information tool to try and find the answers. This shows an understanding that the Internet has the information for development in Lesotho but these young people generally do not have access to it. "Younger people want the country to move forward, they want to learn, but haven't had the opportunity to learn. There's so much corruption. Money is pumped in as foreign aid but isn't going to who it should be" (Mr B 1998).

Internet Café in Maseru, Lesotho



Source: Struthers 1999

Although not an exact parallel there is a similar story from India about the Internet and youth's curiosity and ingenuity that is worth telling. Sugata Mitra, Head of Research at New Delhi's NIIT (a global information technology company) is passionate to provide computer-based education for poor and less educated children. This he did by providing "the hole in the wall experiment" of a permanently live high-speed Pentium computer in a wall of a slum (Judge 2000).

Monitoring the use Mitra found that the keenest users from the slum were children aged 6-12 years who taught themselves to draw, play games and browse the Internet. Mitra then set up another computer in a rural area and achieved similar results. The response from women was very positive, "it's very good for the children" (Judge 2000).

More complicated experiments were done such as, Mitra played an MP3 digital music file and left without explaining how he did this. However a week later he found that the children had downloaded free MP3 players and could play their favourite songs and had found all the Hindi music on the Internet. Also Mitra gave the children five middle-class school physics exam questions, which the children could not initially understand, but were given two hours to find answers on the Internet. This they did correctly and they had learnt about the subject according to the physics teacher from the middle class who questioned and although the students "don't know everything about this subject... they do know one hell of a lot" (Judge 2000). Even regarding the use of English which is said to be a barrier for accessing the Internet this did not prove to be a language barrier for these children who preferred English and not their home language Hindi interface, which they shut down (Judge 2000).

Therefore Mitra became convinced that using computer-based education "where we cannot intervene very frequently you can multiply the effectiveness of 10 teachers by 100 - or 1,000 - fold if you give children access to the Internet" for the 500 Indian million children who need to be educated (Judge 2000). According to Mitra the value of this story is simply that children are able to teach themselves how to operate a computer at a basic level and "everyone agrees that today's children must be computer-literate²⁹" (Judge 2000).

However a major drawback is cost because this will require 100,000 computers at an estimated \$2 billion. Mitra maintains this must be a government project with government funding although additional private or international bodies' funding could be used because, "governments will have to realize that the problem of the haves and have-nots is about to [become] the problem of the knows and knows-not... another great big divide" (Judge 2000).

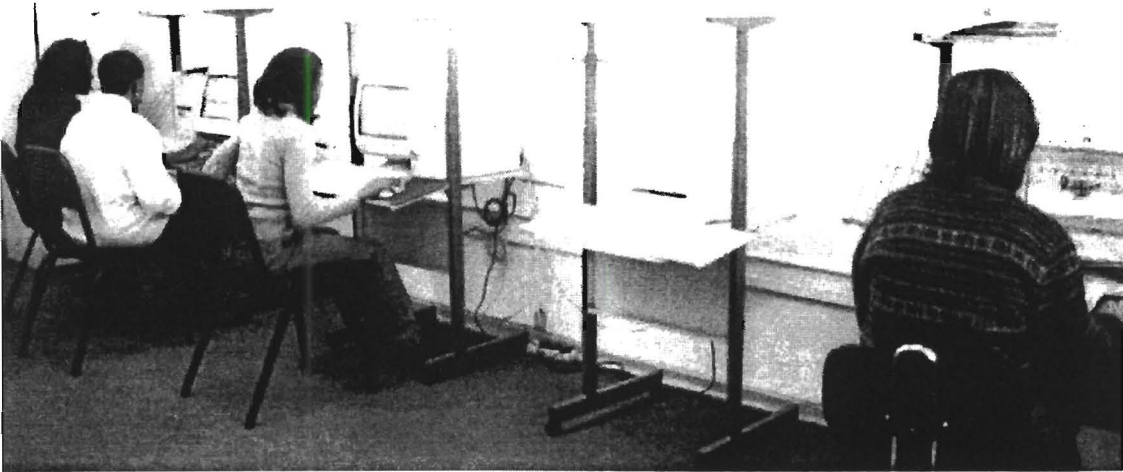
To return to Lesotho and the Internet Café, Mr B shares this enthusiasm for the Internet and education, "Yes, the Internet is a very, very good educational tool" (Mr B 1998).

In 1999 the Internet Café was opened in Maseru, and it is "quite busy" (Mr D1999).

Expatriates, Peace Corps volunteers, international visitors, local students and aid workers are the main users. It costs R10 per month for an e-mail account and R10 for half an hour's Internet use. It is open during work hours from Monday to Saturday. In the school holidays

²⁹ In Malaysia, China and Africa there is a large bicycle population. But according to Mitra, "you don't ask how the population became bicycle-literate. They just use it. So what I'd like to see is an India in which a large part [of the population] treats the computer that way" (Judge 2000).

Inside the Internet Café in Maseru, Lesotho



Source: Struthers 1999

training and games are offered for school students. Training sessions are also offered in the Internet Café and are "very well subscribed to mostly by businesses or government departments because they have such large training budgets" however the fees are the same whether for a company or individual. The Internet Café is prepared to train teachers or health or development workers to use the Internet to access information (Mr D 1999).

Mr B regards Internet cafés, in urban and rural areas, as key to Internet development. The target group should be youth aged 14-25 year olds whether school youth or the young employed. Youth, it is said, are critical for inclusion because they have the ability to adapt and learn and will develop Lesotho. But the idea that each person should have Internet access from their desk is too expensive. Instead Internet cafés could provide this service throughout Lesotho. On the Internet is information on health, education, agriculture, small businesses that could help reduce poverty and provide growth and development (Mr B 1998).

Mr D argues that what is needed is for a critical mass of Internet users to be reached amongst the Basotho for the Internet to develop. This might be from students at NUL who have access to the Internet, or from youth using Internet cafés etc. But an environment needs to be created for that critical mass to be reached. Then the Internet will grow and costs will drop further (Mr D 1998). The Internet "should be regarded as a basic facility. A computer and telecommunications are marginal costs and can be operated from a school, health or aid post, kiosk, and in the town at an Internet café or from libraries" (Mr D 1998).

The Internet is considered very useful for education and research purposes. In particular Internet access is considered to be most beneficial for school students (Mr C 1998; Mr G 1998; Mr C 1999; Ms K 1999). This is because the Internet can "speed up learning processes for students in schools" (Mr J 1998).

To try and provide Internet access to youth, LOE had attempted to begin an Internet project aimed at the less privileged and poor schools in Maseru. LOE will provide free Internet access and donate or loan computers. All the school has to be able to prove is that the school is able to pay the telephone call costs (Mr D 1999). The Internet project on television, "Free computers and free Internet'. And we got zero response. Maybe they don't watch television. So we are trying to look for another way to channel this" (Mr D 1999).

This lack of response is probably a result of the ignorance about the Internet because principals have similar conservative and negative attitudes as that of the government and LTC

to the Internet eg. as a source of pornography (Mr B 1998). The major problem for Mr C is that he does not have the time to go individually to schools to promote the advantages of the Internet or the time to write up proposals for donors (Mr C 1999).

LOE would initially fund the project through the registration of domain names³⁰. Second-hand computers for M2,500 can be bought which students need not be afraid of damaging and "get their teeth into" (Mr C 1999). Supplementary donations of computers could come from the American Embassy or the British High Commissioner (Mr C 1999).

But the use of these computers is only for the students to play and learn and not for the staff or for any administrative work.

"I don't want to give them these computers and know that they are not going to be used, or that they are going to be used by management. They must go into classrooms and be used for education and not for running the school and doing their accounts on them. That I'm not going to do. They've got to be used for education" (Mr C 1999).

To make the project a success Mr C suggested that an aid organisation decides that their project is to get the Internet into the schools. But this is unlikely by UNESCO or in particular, UNDP, who "would be the last people we'd approach. UNDP spent an absolutely phenomenal amount on computers" upgrading every eight months (Mr C 1999).

³⁰ If the company Quadrant wants to register its name "Quadrant.co.ls" it will have to do so with LOE because LOE manages the ".co.ls" domain. LOE would charge Quadrant R500 and R250 would go to LOE's costs for the management of that domain and R250 would then go into a pool for the computers.

4 Conclusion

This case study of Lesotho has investigated the questions whether the Internet will reduce or eradicate poverty in Lesotho and whether it will provide fast-based information for development in Lesotho. This chapter has explained that Lesotho is an impoverished country as a result of conquest of land by South African white settlers forcing Lesotho in order to survive to become a cheap labour reserve mainly for migrant labour to the South African mines.

Since the ending of apartheid the South African government has made no attempt to include Lesotho in telecommunications or the Internet although Mbeki speaks of the African Renaissance and the African Connection Rally, to promote telecommunications and the Internet, took place. But a noticeable gap in the names of countries visited during the Rally is the country surrounded by South Africa, Lesotho.

Over 50 percent of the population work as sub-subsistence farmers barely eking a living off the land as most basic food is imported from South Africa. Many migrant mine workers have been retrenched and are unemployed. The few workers who are formally employed work mainly in the service industry and are not highly paid. In Lesotho 80 percent of the population are poor. Education suffers from high teacher pupil ratios and a shortage of teachers and classrooms. As a result students suffer and there is a high drop-out and repeat rate. There is a lack of training for skilled workers in information and communications technology. However the Internet Café is prepared to provide training and LOE is attempting to provide computers in schools to help the youth access the Internet. There is a lack of basic infrastructure in

Lesotho. A tiny 2 percent of the population have electricity despite the production of double the domestic consumption needs for both urban and rural areas. The ratio of telephone lines is low at 0.75 lines per 100 people despite the obvious demand as seen by the growing number of cellphone users.

LTC has actively prevented the Internet from developing because of its bureaucratic ineptitude and fear of losing control over telecommunications. The government and LTC use the perceived disadvantages of the Internet (pornography and security) rather than the many advantages (tele-education, tele-health, tele-agriculture), as an excuse to hamper provision. These problems are manifest in the difficulty that the two commercial Internet service providers, Square One and particularly LOE, have had with providing Internet services in Lesotho. The National University of Lesotho (NUL) has been an exception with Internet service provision from inside Lesotho at Roma since 1992. However it is only since 1998 that it is becoming more widely available at NUL.

Those who have Internet access are a small elite with the majority excluded. The digital divide is based on access to telephones and electricity, education level, income level, and location (urban or rural). The minority that has Internet access are students, academic and administrative staff at the National University of Lesotho, certain government ministries or departments (Defence, Tourism, Agriculture, Energy), LHDA, banks, businesses, non-governmental organisations, expatriates, consultants and a few pupils at an elite school - Machabeng High School. Access is overwhelmingly in the capital Maseru and the few exceptions are to the large Lesotho Highlands Water Project. However there is no Internet

provision into the poor urban areas, smaller towns or the rural areas for the majority of the people to receive any benefits of the Internet.

Moreover where there is Internet access it is top-down with the Registrar at the University, Principal Secretary, and company manager or non-governmental director first receiving access, then only limited, if any, access is made available in the organisation. The Internet is therefore being used in organisations to reinforce power and control at the top. It is used for managerial communication with the head office or to generally keep in contact. It is not perceived as a vast “online library” for information to alleviate or eliminate poverty and to provide fast-based information for growth and development.

LOE's Internet Café provides access to anyone at a low cost but this is above many people's means. LOE is hampered from expanding further into other towns because of LTC. However, as a commercial service provider, LOE's aim is not to provide universal service and access and this is the task of the government. Access could be proved in libraries, clinics or health centres but the government is failing to do this and is playing an obstructionist role.

Therefore the conclusion is that the Internet in Lesotho is not providing information to help provide social and economic development to reduce or eliminate poverty. Rather the Internet is contributing to a growing digital divide between the elite information haves and the overwhelming information have-nots. This divide is based on income, education level and whether rural or urban based. The majority of people in Lesotho experience no benefits from the Internet and face increasing poverty and social exclusion.

CHAPTER 7

Conclusion

The questions examined in this thesis are: whether the assumption that the information society will reduce or eliminate poverty and bring social and economic benefits is correct, whether the Internet is providing information for social and economic development, whether there is even greater exclusion of Africa from “global society”, and whether there is a growing digital gap, the “digital divide”, as a result of the Internet, between the information haves and have-nots in the developed countries, and between the developed and developing countries such as those in Africa. The case study of Lesotho is used to explore the question whether the Internet in Lesotho is providing information to reduce or eliminate poverty and for social and economic development.

An in-depth conceptual analysis of the “information society” is given to provide a framework for understanding Africa and the information society and the case study of Lesotho. In Chapter 3 it is shown that the information society, or new economy, and globalisation are driven by the Internet. The idea of the information society rests on the pervasiveness of the information revolution and the critical role information has for economic growth and development. Globalisation and the new economy are dependent on information technology both for the huge profits made from the Internet, such as through the provision of software (Microsoft) or Internet companies (Yahoo! or Amazon.com), as well as from the use of the Internet to transfer vast quantities of information or finance around the world in real time. Therefore for Africa and Lesotho to be part of the new economy, the globalised information

society, the Internet is critical. Without the Internet, Lesotho and other African countries, or whole communities in Africa are excluded from the information society.

The assumption whether the information society brings social and economic benefits is explored in Chapter 3 in relation to the East Asian countries, India and the United States, and a poorer developing country, India. The South East Asian countries and the United States with its continued growth and low unemployment which is said to be based on new technology are held up as examples for Africa to follow.

The example of South East Asia shows that the economic "miracle" was not through the use of the Internet but through the production of semi-conductors. This was based on cheap labour mainly of women workers working in poor conditions usually with no trade union rights. At the same time there were certain basic social conditions met by the government which are lacking in Africa - the provision of basic education and housing. Although semi-conductor industries may have brought some development the majority of the people in South East Asia remain poor. There are no semi-conductor industries in Africa and they cost billions to develop. Moreover semi-conductor industries cannot be developed in every country because this would lead to overproduction with a resulting drop in prices, lower wages, job losses and increased poverty.

The example of India is used as a developing country that has started software industries in Hyderabad and Bangalore. New software millionaires are being made from a highly skilled elite number of workers. Out of a population of 1 billion only a very small 280,000 are employed in information and communications technology industries. A similar skewed

development of a very small number of people included and the majority excluded from the information society would most likely develop in Africa and is evident in the case study of Lesotho. The digital divide is an additional factor increasing poverty, inequality and social exclusion and the overwhelming majority of the population in India do not experience any benefits from the Internet.

In contrast to India, a poor developing country, the richest and most powerful country in the world, the United States, is also used as an example where the digital economy has brought immense wealth only to a few. The United States has the highest number of Internet users in the world and it is said that new technology has produced growth and increased productivity. Yet there is greater inequality and polarisation in society than ever before and CEOs earn 410 times the wage of an average worker. In Lesotho evidence of a similar polarisation has been given. In Lesotho the top 10 percent receive 44.06 percent of the national income and the bottom 10 percent receive a tiny 0.86 percent.

If Silicon Valley is taken as the epitome of the information society even there 70 percent of the residents are excluded. They are not part of the small minority in high paying technology jobs able to spend \$4 million cash on a house or use share options as inducements. Most workers in Silicon Valley are low paid, contract or casual workers in services and fired at short notice. Workers are unable to afford housing and are forced to live with 5-6 other families in single apartments or sleep on the night bus travelling all night long down the valley. Therefore even in the richest country in the world the Internet has not brought greater equality and benefits for the majority in Silicon Valley.

Instead there is a growing digital divide in Silicon Valley and in the United States as a whole that the government recognises. The divide is based on income, education, urban or rural, gender and race. There is growing concern from governments in the developed countries of the digital divide in developed countries and between the developed and developing countries because the divide results in greater poverty, inequality and social exclusion. Initiatives have been launched by the governments of the United States, Britain and other developed countries to bridge the digital divide but a problem is that at the same time welfare grants and public government expenditure is being cut leaving less money to address this problem.

The digital divide between the rich and poor countries is a concern of the G8 countries and Dot Force has been set up to address this. The aim is to build an infrastructure for the Internet in developing countries because while there has been enormous growth in the Internet, Africa (except South Africa) is left behind. The G8 countries and Dot Force's concerns for information technology policies and regulations, and reductions in costs are not new and have been raised at the different meetings and events to promote the Internet in Africa as has been described in Chapter 4. If in the United States and other developed countries there is already a digital divide of concern to governments, then without the Internet, or, with very little access to the Internet, as shown in Lesotho, Africa will face greater exclusion from global society as the digital divide increases.

There are two different positions on Africa and the information society as explained in Chapter 3. On the one hand it is argued that the Internet will bring Africa social and economic development, greater democratisation, and the African Renaissance which is based on telecommunications and the Internet. On the other hand as explained above it is argued that

Africa faces greater exclusion because of lack of Internet access from global society. The digital divide is an additional burden increasing poverty, inequality and social exclusion of Africa. Africa has the largest number of poor countries in the world. In Africa the living conditions for millions are "little better than they were 30 years ago, and for many they are worse" according to the IMF (Hawkins 2000). More than half the population lives on less than \$1 a day (Holman & Hawkins 2000). Africa is ravaged by wars, diseases, disasters, floods and famines. According to Kofi Annan, UN Secretary-General, governments are corrupt and "billions of dollars in public funds continue to be stashed away by some leaders even while roads are crumbling, health systems have failed, schoolchildren have neither books nor desks nor teachers, and the phones do not work" (Holman & Hawkins 2000).

However since 1995 concerted attempts have been made by international agencies and the leaders of the G7 countries for Africa, despite the obstacles it faces, to participate in the global information society as is described in Chapter 4. The assumption is that Africa would benefit from the information society. Africa would be able to "leapfrog" stages of social and economic development through using the Internet. At these meetings the possible Internet benefits were identified such as information for education, health, agriculture and growth. Governments were urged to promote the Internet and develop telecommunications through liberalisation or privatisation as part of globalisation. It was emphasised that universal service and access to telecommunications and the Internet was needed including in rural areas to bridge the widening gap between the information haves and have-nots.

What is driving the initiatives by the international agencies, G7 and G8 leaders, to include Africa in the information society? Globalisation. Although this is not discussed in detail in this

thesis the new economy and the role of the Internet are dealt with in Chapter 3. The difficulties for Africa to participate or compete in the new economy are shown by the statistics that the top ten companies own 86 percent of the global telecommunications market, 70 percent of the computer market, 94 percent of the software market. Therefore Africa's participation seems to be mainly as a new market for these companies.

A major obstacle for Internet access in Africa is the lack of telecommunications. In Chapter 4 this is identified as a major problem for Africa's participation in the information society and leading to an increasing digital divide between the information haves and have-nots in developed countries and between developed countries and Africa. In the case study on Lesotho this is evident as a small elite have access to information from the Internet while the majority do not have access.

In Chapter 5 statistics on telecommunications are given to prove that Africa lacks an adequate telecommunications infrastructure. This is despite the fact that telecommunications are growing on average at 10 percent a year in Africa and there is a developed digital infrastructure in some countries. In some countries, for example, South Africa, there has been significant growth in the number of telephones but these are unequally distributed within the population with advantaged urban areas favoured. However the majority of African countries lack a basic telecommunications infrastructure.

Africa has the least developed telecommunication infrastructure in the world. It has 14 million lines for 739 million people. Yet in one city, Tokyo, or New York, or London, in an advanced industrialised country, there are more telephone lines than for the whole of the African

continent. Specific telecommunication problems are that the installation costs in Africa are the highest in the world because foreign exchange is used to buy the equipment and call costs are high. There are bureaucracies, inefficiencies and corruption that result in failures in delivery or service provision. Skilled workers are lacking to maintain a decent service. Because of the lack of reliability and abysmal service the number of cellphone users has increased. However the conclusion drawn from evidence presented in Chapter 5 is that the majority of the population in Africa remain without any telephones which would give access to the Internet and therefore social and economic development.

In Chapter 5 the provision of the Internet in Africa is investigated. The evidence shows that the number of Internet hosts in Africa are very small, except South Africa where there is massive inequality. In Africa, excluding South Africa, there are 0.02 percent of the world's total number of Internet hosts. Including South Africa there are 0.25 percent of the world's total number of Internet hosts. The digital divide between the developed and developing countries is clear with the one country, the United States, having the highest number of Internet users and hosts and one continent, Africa, the least number of Internet hosts.

In chapter 6 in the case study on Lesotho the provision of telecommunications and the Internet, and whether the Internet in Lesotho is providing information to reduce or eliminate poverty is examined in detail. This is based mainly on evidence from interviews, official documents and other sources.

Lesotho is surrounded by South Africa which is the richest country in Africa. South Africa has a teledensity of 14 telephone for 100 people in 2000. South Africa has 167,635 Internet hosts

more than 1,266,000 Internet users - the highest number of hosts and users in Africa – statistics given in Chapter 5. Yet despite this geographic position surrounded by South Africa Lesotho has not experienced the benefits of South Africa's well developed telecommunications infrastructure or Internet sector.

From the case study the evidence shows that in Lesotho telecommunications are in a very poor state and that there are considerable obstacles and difficulties, such as, corruption, incompetence, lack of skilled workers and high telephone call costs. Lesotho has a teledensity of 0.75 lines for 100 people despite the high demand for telephones. The problems of telecommunication provision in Lesotho can be generalised to other African countries where there are similar problems, for example, in Nigeria.

The number of estimated Lesotho Internet users given in the case study are based on the e-mail and subscriber figures for NUL, LOE and Square One. There are about 2,600 users. In addition to the poor state of the telecommunications sector in Lesotho there was an additional obstacle to the Internet developing in Lesotho because it was considered "illegal". However even when considered "legal", the development of the Internet in Lesotho has been impeded through lack of telecommunications provision.

Following the worldwide pattern of Internet use, in Africa those who are connected to the Internet are the wealthier, more educated, generally male, English speakers and live in urban centres. Similarly, in Lesotho, evident in Chapter 6, it is the better educated, better paid, English speaking and urban-based, directors and managers of banks, businesses, international agencies, academics, students, expatriates and government officials that have access to the

Internet. But these Internet users in Lesotho are a minority. The Internet is used for managerial purposes – to communicate with head office, and for communication in general – sending reports or keeping in contact. Although some current news may be read on the Internet it is not perceived as an “online library” containing a wealth of information on health, education or agriculture (see Chapter 4 for numerous examples in the African Information Society Initiative section). Therefore the Internet in Lesotho is not being used for information to alleviate or eliminate poverty and for information to provide for social and economic development. The consequence of the considerable obstacles to Internet provision such as, the lack of an adequate telecommunications infrastructure, bureaucracy, corruption, past “illegality”, results in a greater digital divide between Lesotho and the developed countries that have adequate telecommunications and Internet provision. Where there is Internet provision it creates a digital divide between those with access and those without – the haves and have-nots - within Lesotho.

Certainly there can be benefits from the Internet, for example, educational, health or agricultural information. It can be a fast and cheap means of communication. Possibly there will be inclusion of some countries, such as South Africa, in the information society although the majority of the people might not be included. Also “Silicon Valleys” within countries, for example, Egypt or South Africa might develop. But again it seems most likely that the majority of people would be excluded. This conclusion is drawn from the examples of South East Asia, India and the United States where there is growing exclusion, increasing inequality and poverty. It is also drawn from the evidence presented on Africa and the case study of Lesotho. Although Lesotho is a deviant case, the case study highlights the difficulties African countries face to provide Internet access because of poverty, lack of infrastructure,

bureaucracies, corruption, high unemployment and lack of skilled workers. The advantage with being a deviant case is that the extreme problems experienced in Lesotho are starkly illustrated.

Telecentres and Internet or Cybercafés are being set up in Africa however these are very few. Their potential is evident in the enthusiastic support from youth at the Internet Café in Lesotho when Internet access was free. From the evidence in the case study of Lesotho, unless African governments provide free universal access in libraries, schools, or clinics the most likely way the Internet will develop in Africa is the same way it has developed in the industrialised countries. The Internet in Africa will be for the elite, the minority, the wealthy, the better educated, and found mainly in urban areas. This will entrench the existing divisions in society between the rich, the information-haves and the poor, the information have-nots.

Much of this thesis is pioneering work. Little is written about the information society in Africa, nothing on Lesotho, and what is written is mainly on South Africa. In this thesis the information is being made available in a systematic form and in one place for the first time. Moreover the thesis places Africa in the context of globalisation and the new economy. It explains that the Internet is driving globalisation and the information society. Using the case study of Lesotho it shows the difficulties for Africa to get the necessary level of Internet provision to access information for development that could lead to leapfrogging stages of development. However, whatever the possible benefits of the Internet and the limited inclusion of certain African countries or communities in the information society, the conclusion drawn in this thesis is that based on the evidence presented, the information society is not eliminating or alleviating poverty. There is greater exclusion of communities and most of the continent of

Africa from global society.

There are obvious limits to the research undertaken. Only the case study of Lesotho was undertaken and this leaves open possible research avenues in many similar small African countries. Studies on Angola, Mozambique or Swaziland because of their proximity to South Africa and their dependence on South Africa could be undertaken. The interviews conducted were with the "tops", the experts in the field, and the voices of ordinary people particularly the poor in both the rural and poor inner cities or towns needs to be heard. Further afield in Nigeria there is a drive for telecommunications and the question to be studied is whether this is leading to increased Internet connections and social and economic development. There is the question whether a minimum infrastructure is necessary in order for a country to enter the information society. On a wider scale the question of Africa and globalisation and new technology could be studied in-depth.

APPENDIX

1. There are two positions on the information revolution and information society, based on the Internet. It is said on the one hand that the Internet will enable countries in Africa to “leapfrog” stages of social and economic development and to bridge the gap between the “haves and have-nots”. On the other hand it is said to be creating a “widening gap” and increasing poverty. Do you agree with either position? What is your position? Why?
2. Is the Internet able to provide information for economic development and growth? How could the Internet be used to bridge the gap between the “haves and have-nots”?
3. In Lesotho how developed is the Internet? How can the Internet be used to bridge the gap between the “haves and have-nots”?
4. In Lesotho where is the Internet found? (towns, highlands etc.?)
5. Who has access to the Internet in Lesotho? How many people in Lesotho have access?
6. How many people have Internet access in your organisation? Does everyone who has a computer have Internet access?
7. For what purposes is the Internet used in your organisation? Do you know how it is used more generally in Lesotho?
8. Is the Internet the fast-based provision of information to reduce or eliminate poverty and provide development in Lesotho?
9. What are the benefits of the Internet?
10. How can the Internet develop Lesotho?

Interviewees

Respondents names are given as Mr A, Mr B, etc. Their full names are not given to protect their identity. Therefore no list of names and addresses is supplied.

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REFERENCES

Online and CD-ROM documents generally do not have page numbers. Hence the lack of page numbers for some of these documents.

Access for all. 1997. In: Enterprise. 111:94.

Africa A-Z continental and country profiles. 1998. ed. Pieter Esterhuysen. Pretoria (South Africa): Africa Institute of South Africa.

Africa must grab chance offered by the Internet to leap-frog into the information age. 1999. In: Cape Times. December 23.

AFRICA TELECOM 98. 1998. Satellite based communications: a shortcut to the global information infrastructure. [Online]. Available: <http://www.telecom98.co.za/satsess.html> [1998, May 8].

AFRICA TELECOM 98. 1998a. The African connection: report of the African ministers of communications May 1998. 1998. [Online]. Available: <http://www.telecom98.co.za/africonnect.html> [1998, May 11].

AFRICA TELECOM 98. 1998b. African telecommunications infrastructure. 1998. [Online]. Available: <http://www.telecom98.co.za/infrastructure.html> [1998, May 29].

AFRICA TELECOM 98. 1998c. New strategies for telecommunications development in Africa. 1998. [Online]. Available: <http://www.telecom98.co.za/strategies.html> [1998, May 8].

AFRICA TELECOM 98. 1998d. Preparatory workshop for African ministers responsible for communications 5th-7th February, 1988 Cape Town report. [Online]. Available: <http://www.telecom98.co.za/afmin.html> [1998, April 21].

AFRICA TELECOM 98. 1998e. Technology advances. 1998. [Online]. Available: <http://www.telecom98.co.za/newtech.html> [1998, May 8].

AFRICA TELECOM 98. 1998f. Telecommunications in Africa: a continent ready to talk. [Online]. Available: <http://www.telecom98.co.za/telecommunications%20in%20africa.html> [1998, April 21].

AFRICAN CONNECTION. 1999a. Telecoms in Africa: African connection. [Online]. Available: <http://www.africanconnection.org/telecomms/africon-eng.html> [1999, April 26].

AFRICAN CONNECTION. 1999b. Telecoms in Africa: the challenge [Online]. Available: <http://www.africanconnection.org/telecomms/challenges.html> [1999, April 26].

- ADF (African Development Forum). 1999. African Development Forum '99. [Online]. Available: <http://www.un.org/Depts/eca/adf/adf99reportintro.htm> [2000, April 7].
- ADF (African Development Forum). 1999b. African Development Forum 1999: Theme 1 - Globalization and the information economy: challenges and opportunities. [Online]. Available: <http://www.un.org/Depts/eca/adf/infoeconomy> [2000, April 7].
- ADF (African Development Forum). 1999c. The way forward to a people-centred African information society. [Online]. Available: <http://www.un.org/Depts/eca> [1999, November 11].
- African development report. 1998. Oxford: Oxford University Press.
- African Green Paper. 1995. [Online]. Available: [http://www.itu.int/plweb-cgi/fastw...c+32902+0++african%20green%20paper](http://www.itu.int/plweb/cgi/fastw...c+32902+0++african%20green%20paper) [1999, February 15].
- African Power Conference. 1999. In: Africa Research Bulletin: Economic, Financial and Technical Series. 36(3):13861.
- Airborne. 1997. In: Economist. [Online]. Available: <http://www.economist.com/editorial/freeforall/21-9-97/tel5.html> [1998, October 10].
- AISI (African Information Society Initiative). 1996a. African Information Society Initiative (AISII) meeting report: co-ordination meeting African Information Society Initiative Addis Ababa. 21-23 October 1996. [Online]. Available: <http://www.bellanet.org/partners/aisi/coordn/oct21/finrepor.htm> [1997, May 22].
- ALI-DINAR, ALI B. 1999, April 27. AFCOM '99. "Facing the challenge of the new millenium". List for Africa Studies. [Online]. Available: e-mail: nuafrica@h-net.msu.edu [1999, April 27].
- ALLCHURCH, NINA. 1998. Phone lines for Africa. In: Mail & Guardian. May 8-14.
- AMOAKO, KINSLEY Y. 1996. Africa's Information Society Initiative: an action framework to build Africa's information and communication infrastructure. [Online]. Available: <http://www.idsc.gov.eg/aai.isadkey1.htm> [1998, April 30].
- AMOAKO, KINSLEY Y. 1997. Preface. In: Building the African Information Society with Public and Private Sector Cooperation. (Edited by Derrick L. Cogburn & Nancy J. Hafkin). Washington: GIIC.
- AMOAKO, KINSLEY Y. 1998. Opening statement by K.Y. Amoako, UN Under-Secretary-General and Executive Secretary of ECA at the Global Connectivity for Africa Conference Addis Ababa, 2 June 1998. [Online]. Available: <http://www.bellanet.org/partners/aisi/globalc/ky.htm> [1998, August 31].
- ANDAH, ING. JOHN S. 1995? Telematics initiatives for sustainable development. [Online].

Available: http://www.sas.upenn.edu/African_Studies/Padis/telmatatics_andah.html
[1998, March 9].

ANI (African Networking Initiative). 1999. African Networking Initiative (ANI). 1999.
[Online]. Available: <http://www.bellanet.org/partners/ani> [1999, October 30].

ARDÉ, GREG. 1999a. Jay's rallying call to Africa. In: Sunday Tribune. March 21.

ARDÉ, GREG. 1999b. Libya mesmerised by Madiba connection in Naidoo's Africa rally. In:
Sunday Tribune. April 4.

ARDÉ, GREG. 1999c. Most challenging driving so far: Naidoo heads homeward. In: Cape Times. April 14.

ARDÉ, GREG. 1999d. Rally sparks interest in Africa being 'wired'. In: Cape Times. April 22.

At the end of the day... 2000. In: Cape Times. July 24.

ATKINS, RALPH. 2000. Indian IT specialists lukewarm over Germany's invitation. In:
Financial Times. April 19.

AUSTEN, IAN. 2000. Who is on the Web reveals some surprises. In: Cape Times
ITechnology. July 4.

AUTOR, DAVID H. et al. Computing Inequality: have computers changed the labor market?
NBER Working Paper No. 5956. Massachusetts: National Bureau of Economic
Research.

AVU (African Virtual University). 1999. About the African Virtual University. [Online].
Available at: <http://www.avu.org/avusite/about/index.htm> [1999, November 9].

BAKER, GERARD. 2000. Europe's illusion about America's weakness. In: Financial Times.
March 28.

BAILEY, STEWART. 2000. Lesotho sets date for sale of telecoms operator. In: Cape Times
Business Report. January 27.

Bandwidth blues "a problem of the past". 2000. In: Business Day. June 28.

BANGEMANN, MARTIN. 1994. The Bangemann report. [Online]. Available:
<http://www.stockholm.se/bm/report> [1998, April 17].

BANGEMANN, MARTIN. 1997a. "Access to information will remove curtains". [Online].
Available: http://www.challenge.stockholm.se/...tins/Articles/article_970528_1.htm
[1998, April 17].

BANGEMANN, MARTIN. 1997b. A new world order for global communications: the need

for an international charter. Telecom Inter@ctive 97. [CD-ROM]. Available: Geveva:ITU.

BARANSHAMAJE, E. et al. 1995. Increasing Internet connectivity in sub-saharan Africa: issues, options, and World Bank group role. [Draft of 29 March 1995]. [Online]. Available: <http://www.worldbank.org/html/emc/documents/africa0395.html> [1997, April 11].

Battle for brains. 2000. In: Financial Times. August 12/13.

BBC (British Broadcasting Corporation) News. 2000. When the web is not world-wide. July 22, 2000. [Online]. Available: <http://news6.thdo.bbc.co.uk/hi/english/world/newsid%5F846000/843146.stm> [2000, July 26].

BBC (British Broadcasting Corporation) News. 2000b. G8 plans hi-tech help for poor. July 22, 2000. [Online]. Available: <http://news6.thdo.bbc.co.uk/hi/english/world/newsid%5F846000/846146.stm> [2000, July 26].

BELL, DANIEL. 1974. The coming of post-industrial society: a venture in social forecasting. London: Heinemann.

BENTON FOUNDATION. 1998. Losing ground bit by bit: low-income communities in the Information Age. [Online]. Available: <http://www.benton.org> [April 28, 2000].

BERNERS-LEE, TIM. 1996. The World Wide Web: past, present and future. [Online]. Available: <http://www.w3.org> [July 5, 1999].

BISHOP, CRAIG. 1998. Naidoo wants to fast track SA along the superhighway. In: The Sunday Independent Reconstruct. 1998, May 3.

BMI TECHKNOWLEDGE GROUP. 1998. BMI TechKnowledge communication technologies handbook 1998. Johannesburg: BMI-T Group.

BÖHME, GERNOT. 1992. The techno-structures of society. In: The culture and power of knowledge. ed. Nico Stehr & Richard V. Ericson. Berlin: Walter de Gruyter. 39-50.

BOND, JAMES. 1998. Speech at Global Connectivity for Africa Conference. [Online]. Available: <http://www.bellanet.org/partners/aisi/globalc/bond.htm> [1998, December 15].

BOON, J.A. 1992. Information and development: towards an understanding of the relationship. In: South African journal of library and information science. 60(2):63-74.

BOON, J.A., J.J. BRITZ & M. DE LANGE. 1993. Size of the information sector in South

- Africa. In: South African journal of library and information science. 61(3):109-123.
- BOUNEMRA, KARIMA, BEN SOLTANE & LISHAN ADAM. 1999. The role of information and communication technologies in science and technology in Africa. In: African renaissance: the new struggle. ed. Malegapuru William Makgoba. Sandton (SA):Mafube Tafelberg. 331-344.
- BOURBEAU, HEATHER. 1997. The rural poor are being taught to use cybertools. In: Business Day. August 13.
- BRADFORD, HELEN. 2000. Peasants, historians and gender: a South African case study revisited, 1850-1886. [Unpublished paper].
- BRECHER, JEREMY. 1996. Global village or global pillage? In: World Politics 95/96. Connecticut:Dushkin. 182-185.
- BRENNER, ROBERT. 1998. The economics of global turbulence: a special report on the world economy, 1950-98. New left review: special issue. 229.
- Britain digitally divided say ministers. 2000. [Online]. Available: <http://www.bbc.co.uk> [2000, April 25].
- BRITZ, J.J., J.A. BOON & M. DE LANGE. 1993. Development of a method to determine the size of the information sector in South Africa. In: South African journal of library and information science. 61(2):61-67.
- BROOKS, DAVID. 2000. G8 plan to bring poor nations online. In: The Sunday Independent. July 23.
- Buenos Aires Declaration on global telecommunication development for the 21st century. 1999. [Online]. Available: <http://www.igc.org/habitat/ics/gii-itu/wtdc-bad.html> [1999, June 15].
- CALLINICOS, ALEX. 1992. Against post-modernism: a Marxist critique. Cambridge [UK]: Polity.
- CASTELLS, MANUEL. 1996. The rise of the network society. Oxford: Blackwell.
- CASTELLS, MANUEL. 1998. Information technology, globalization and social development. [Online]. Available: <http://www.chet.org.za/castells/devinfage.html> [2000, July 14].
- CASTELLS, MANUEL. 1999. Information technology and global capitalism. [Online]. Available: <http://www.chet.org.za/castells/itgc.html> [2000, July 14].
- CASTELLS, MANUEL. 1999a. The social implications of information and communication technologies. [Online]. Available: <http://www.chet.org.za/castells/socialicts.html> [2000, July 14].

- CENTRAL BANK OF LESOTHO. 1998b. Quarterly Review. XVII(3). Maseru: Central Bank of Lesotho.
- CERF, VINT. 1995. History of the Internet. Internet: a knowledge odyssey. [CD-ROM]. [US] MindQ.
- CHASIA, HENRY. 1998. International telecommunications union: Africa telecom 98 preliminary workshop for ministers. [Online]. Available: <http://www.telecom98.co.za/speeches/chasia.html> [1998, April 21].
- CHALMERS, ROBYN. 1998. Continent must tune in to global vision. In: Business Day. May 12.
- CHOMSKY, NOAM. 1997. Democracy in a neoliberal order: doctrines and reality. Cape Town (South Africa): University of Cape Town.
- CHOSSUDOVSKY, MICHEL. 1997b. The global financial crisis. [Online]. Available: <http://www.trican.com/~rsantos/global.htm> [1999, June 18].
- CHOSSUDOVSKY, MICHEL. 1998. Global poverty in the late 20th century. [Online]. Available: <http://www.heise.de/tp/english/special/eco/6099/1.html> [1999, June 28].
- The Clinton-Gore administration: from digital divide to digital opportunity. 2000. [Online]. Available: <http://www.whitehouse.gov> [2000, April 25].
- COCKBURN, C. & T.D. WILSON. 1996. Business use of the world-wide web. In: Internal journal of information management. 16(2):82-102.
- COGBURN, DERRICK L. 1997. Building the information society in Africa with public and private sector cooperation. In: Building the information society in Africa with public and private sector cooperation. Ed. Derrick L. Cogburn & Nancy J. Hafkin. Washington: GIIC. 2-7.
- Communiqué of Addis Ababa, April 7, 1995. 1995. [Communiqué from the symposium: African Regional Symposium on African Telematics for Development - Ethiopia, 3-7 April, 1995]. [Online]. Available: http://www.sas.upenn.edu/African_Studies/Padis/telmatcs_communik.html [1997, July 1].
- COOK, KITTY. 1999. Gates foundation donates computers to Mississippi libraries. [Online]. Available: http://www.its.state.ms.us/news/1999_04/gates.htm [2000, August 10].
- COOK, LOUISE. 1999. Farmers to plough through the Internet. In: Business Day. June 2.
- Creating a condensed world: new communication tools for UNDP. 1998. In: UNDP News. Jan-Feb: 4.

- CUNLIFFE-JONES, PETER. 2000. Nigeria's electricity system fails again. In: Cape Times Business Report. July 19.
- DAVIS, SIMON. 2000. The lights go down on Silicon Valley. In: Sunday Times Business Times. July 16.
- Davos dispatch. 1999. [Online]. Available:
<http://www.time.com/time/reports/davos/dispatch05.html> [2000, August 15].
- DAY, ROBERT. 1997. Kick-starting the equitable information society in the developing world. Telecom Inter@ctive 97. [CD-ROM]. Available: Geneva: ITU.
- DEANE, JAMES. 1999. Introduction to Week 7 - Information and Communications Technologies. [Online]. Available: e-mail: ikd@jazz.worldbank.org [1999, March 23].
- DEANE, JAMES. 1999b. [IKD] Information overload - Introduction to week 6. IKD. [Online]. Available: e-mail: ikd@jazz.worldbank.org [1999, March 16].
- DEANE, JAMES. 1999c. [IKD] Implications for International Inst. IKD. [Online]. Available: e-mail: ikd@jazz.worldbank.org [1999, April 12].
- Debate over internet body. 1999. In: Business Day. May 6.
- DE LANGE, M., J.A. BOON & J.J. BRITZ. 1993. Information sector: critical review of selected readings with specific reference to South Africa. In: South African journal of library and information science. 61(1):1-10.
- DE IONNO, PETER. 2000. Johnnie runs for cover as Nasdaq bubble bursts. In: The Sunday Independent Business Report. April 16.
- DENYER, SIMON. 2000. Africa angry at G8's lack of promised debt relief action. In: Cape Times Business Report. July 18.
- DENZIN, NORMAN K. & YVONNA S. LINCOLN. 1998. Introduction: entering the field of qualitative research. In: The landscape of qualitative research: theories and issues. California: Sage. 1-34
- DEVRAJ, RANJIT. 2000. Digital divide replicates. In: Dawn: the Internet edition. [Online]. Available: <http://www.dawn.com/2000/07/23/int8.htm> [2000, September 1].
- Digital divide in the news. 2000. [Online]. Available: <http://www.digitaldividenetwork.org> [2000, April 28].
- D'ORVILLE, HANS. 1999. Towards a global knowledge society. In: UNDP News. Feb/March:20-21.

Draft policy on Internet for the Kingdom of Lesotho. 1998.

DRAKE, WILLIAM J. 2000. From the global digital divide to the global digital opportunity. [Online]. Available: <http://www.weforum.org...ide+Initiative+-+Executive+Summary> [2000, August 22].

Drawing the short straw. 2000. In: Financial Times. August 26/27.

DRUCKER, PETER FERDINAND. 1992a. The age of discontinuity: guidelines to our changing society. New Brunswick [USA]: Transaction.

DRUCKER, PETER, FERDINAND. 1992b. The changed world economy. In: The culture and power of knowledge. ed. Nico Stehr & Richard V. Ericson. Berlin: Walter de Gruyter. 257-277.

DRUCKER, PETER, FERDINAND. 1994. Post-capitalist society. Oxford: Butterworth-Heinemann.

DRUCKER, PETER, FERDINAND. 1998. From capitalism to knowledge society. In: The knowledge economy. ed. Dale Neef. Boston: Butterworth-Heinemann.

DUGGER, CELIA. 2000. Parallel worlds of village and Net meet in India. In: The Sunday Independent. March 26.

DUNNE, NANCY. 2000. Strong jobs data boost chances of US rate rise. In: Financial Times. January 8/9.

ECA (Economic Commission for Africa). 1996a. Africa's Information Society Initiative (AISII): an action framework to build Africa's information and communication infrastructure (Seventh meeting of the TEPCOW, 1 April 1996). [Online]. Available: <http://www.worldbank.org/html/emc/documents/hlwgreport.html> [1997, May 22].

ECA (Economic Commission for Africa). 1996b. African Information Society Initiative (AISII): an action framework to build Africa's information and communication infrastructure. Ethiopia: Economic Commission for Africa.

ECA (Economic Commission for Africa). 1996c. Building Africa's information highway: ninth session of the conference of African planners, statisticians, and population and information specialists, Addis Ababa, 11-16 March 1996. [Online]. Available: http://www.sas.upenn.edu/African_Studies/ECA/eca_plnrs5.html [1997, June 19].

ECA (Economic Commission for Africa). 1997. Progress report on the implementation of the African Information Society Initiative. [Online]. Available: <http://www.un.org/Depts/eca/conf/23conf/cm23-7.htm> [1999, March 15].

ECA (Economic Commission for Africa). 1998. Global Connectivity for Africa: issues and options. [Online]. Available: <http://www.bellanet.org/partners/aisi/globalc/index.htm>

[1998, October 31].

ECA (Economic Commission for Africa). 1999a. Developing National Information and Communications Infrastructure (NICI) policies, plans and strategies: the 'why' and 'how'. [Online]. Available: <http://www.un.org/Depts/eca/adf/codipap2.htm> [1999, November 1].

ECOSOC (Economic and Social Council). 2000. ECOSOC high level segment on ICTs for development takes place at United Nations, New York, 5-7 July. [Online]. Available: <http://www.un.org/webcast/ecosoc2000> [2000, July 14].

EIU (Economist intelligence unit). 1998. EIU Country Profile: Botswana / Lesotho 1998-99. New York: Economist Intelligence Unit.

EIU (Economist intelligence unit). 1999. EIU Country Report 2nd Quarter 1999 Botswana / Lesotho. New York: Economist Intelligence Unit.

EIU (Economist intelligence unit). 1999b. EIU Country Profile: Botswana / Lesotho 1999-2000. New York: Economist Intelligence Unit.

EIU (Economist intelligence unit). 2000. EIU Country Report April 2000: Botswana / Lesotho. New York: Economist Intelligence Unit.

ELLIOT, LARRY. 1998. How to turn a recession into a slump. In: Mail & Guardian. 14(34).

ELLIOT, LARRY. 1998b. Globalisation in need of repairs. In: Mail & Guardian. 14(5).

ELLIOT, LARRY. 1999. The rise and rise of the super-rich. In: Mail & Guardian. 15(29).

Empowerment of Telecom sector in sub-Saharan Africa. In: Newslink Africa Feature 17(29). [Online]. Available: <http://www.adlinkt-newslinkafri.com/nlahome.htm> [1999, July 19].

ENSOR, LINDA. 2000. Philosopher of cyberspace. In: Business Day. July 12.

Environmental potential atlas for South Africa. 1997. ed. Willem van Riet et al. Pretoria [South Africa]: Van Schaik.

ERNBERG, JOHAN. 1998? Networking/Telecentres [Online]. Available: <http://www.sn.apc.org/ecis/wshop6.htm> [1999, January 16].

Europe gets the message. 1999. In: Financial Times. December 11.

Europe looks to improve on the US economic model. 2000. In: Business Day. April 3.

Europe falling further behind in IT race. 2000. In: Financial Times. March 11-12.

- EC (European Commission). 1995. G-7 ministerial conference on the information society: theme paper. [Online]. Available: <http://www.ispo.cec.be/g7/keydocs/themepap.html> [1997, April 11].
- EC-DGIII (European Commission - DGIII. 1998?. The information society. [Online]. Available: <http://europa.eu.int/en/comm/dgiii/infosoc.htm> [1998, February 24].
- EVELETH, ANN. 1999. Rural link-up gets disconnected. In: Mail & Guardian. 15(48):45.
- FRANCIS, S., H. DUGMORE & RICO. 1997. Madam & Eve's greatest hits. Sandton (South Africa): Penguin Books.
- G-8 talks to look at "digital divide". 2000. In: Business Day. July 20.
- GARDNER, DAVID. 2000. India's plans to pulg the brain drain. In: Financial Times. April 24.
- Gates earns more than some countries produce. 1999. In: Cape Times Business Report. December 18.
- GLF (Gates Learning Foundation). 2000. Digital Divide Research. [Online]. Available: <http://www.glf.org/learning/libraries/default.htm> [August 10, 2000].
- GEORGE, NICHOLAS & ALAN CANE. 2000. Broadband internet access for all Swedes in two years. In: Financial Times. March 30.
- Getting the rural population connected. 2000. In: Business Day. June 28.
- GETZ, MATT. 1998. 'G7-centric' attitudes dismiss African poverty. In: Cape Times Business Report. October 6.
- GILBERT, MARK. 2000. Genome policy and Microsoft saga hit Nasdaq hard. In: The Sunday Independent Business Report. April 16.
- GITHINJI, WANJA N. 2000. The lights go out across Kenya. In: The Sunday Independent. September 3.
- GIIC (Global Information Infrastructure Commission). 1996. GIIC platform issues. [Online]. Available: <http://www.gii.org/egi00183.html> [1998, May 30].
- GIIC (Global Information Infrastructure Commission). 1997. GIIC statement of Addis Ababa. In: Building the information society in Africa with public and private sector cooperation. (Edited by Derrick L. Cogburn and Nancy J. Hafkin). Washington: GIIC. 77-78.
- GKP (Global knowledge partnership). 1997. Global Knowledge conference. [Online]. Available: <http://www.globalknowledge.org/english/toronto97/index.html> [1998,

October 19].

GKP (Global knowledge partnership). 1997b. Global Knowledge Partnership. [Online]. Available: <http://www.globalknowledge.org/english/index.html> [1998, October 19].

GKP (Global knowledge partnership). 1999. Who are we?. [Online]. Available: <http://www.globalknowledge.org/whoarewe.html> [1999, September 30].

GKP (Global knowledge partnership). 2000. Second Global knowledge Conference (GKII): Report of the Global Knowledge Forum proceedings. [Online]. Available: http://www.globalknowledge.org.my/gkf_report.pdf [2000, June 29].

GLOBAL REACH. 2000. Global Internet statistics. [Online]. Available: <http://www.glreach.com/globstats/index.php3> [2000, July 13].

GOETZ, J.P. & M.D. LECOMPTE. 1984. Ethnography and qualitative design in educational research. Orlando: Academic Press.

GOLDSTUCK, ARTHUR. 1999. Personal e-mail. May 7, 1999.

GOLDSTUCK, ARTHUR. 2000. Personal e-mail. March 1, 2000.

GORDON, GREG. 1999. Tapping into Africa's potential. In: Sunday Times. April 18.

GOVERNMENT OF LESOTHO. 1979. Telecommunication Act 1979 Act No. 12 of 1979. In: Laws of Lesotho. XXIV:50-71.

GOVERNMENT OF LESOTHO. BUREAU OF STATISTICS. 1994. Lesotho statistical yearbook. Maseru: Bureau of Statistics.

GOVERNMENT OF LESOTHO. BUREAU OF STATISTICS. 1994b. Lesotho statistical yearbook. Maseru: Bureau of Statistics.

GOVERNMENT OF LESOTHO & WORLD BANK. 1995. Lesotho: Strategic Economic Options Report Phase II presented to the Ministry of Economic Planning. Maseru.

GOVERNMENT OF LESOTHO. 1995b. Government Gazette extraordinary. XL (81).

GOVERNMENT OF LESOTHO. MINISTRY OF ECONOMIC PLANNING. 1997. Sixth national development plan 1996/97 - 1998/99. Maseru: Ministry of Economic Planning.

GOVERNMENT OF LESOTHO. MINISTRY OF LABOUR AND EMPLOYMENT
BUREAU OF STATISTICS. 1997b. Labour force survey 1997. Maseru: Bureau of Statistics.

GOVERNMENT OF LESOTHO. 1997c. Lesotho 8th Round Table Conference in Geneva:

Poverty reduction within the context of good governance. Maseru: Government of Lesotho.

GOVERNMENT OF LESOTHO. MINISTRY OF TRANSPORT, POSTS AND TELECOMMUNICATIONS. 1998. Telecommunications sector restructuring strategy. Maseru: Ministry of Transport, Posts and Telecommunications.

GRAWITZKY, RENEE & ILJA GRAULICH. 1999. Mines may shed 11,700 jobs. In: Business Day. July 7.

GREENSPAN, ALAN. 1998. The globalization of finance. In: Cato 17(3):243-250.

GREYBE, DAVID. 1999. Lesotho bribery case set for May. In: Business Day. December 8.

GRIFFITH, VICTORIA. 2000. New economy, same old story for women. In: Business Day. August 31.

GUBA, EGON G. & YVONNA S. LINCOLN. 1998. Competing paradigms in qualitative research. In: The landscape of qualitative research: theories and issues. California: Sage. 195-220.

GUMBEL, ANDREW. 2000. Only millionaires can afford to live here. In: The Sunday Independent. March 12.

HADDAD, WADI D. 2000. Is the divide digital. In: TechKnowLogia. [Online]. Available: <http://www.techknowlogia.org> [2000, March 18].

HAFKIN, NANCY J. Re: ECA. Personal e-mail. 2000, September 22.

HALL, TONY. 1995a. "Addis hosts historic 'superhighway' conference, but will policymakers go with the vision?". [Online]. Available: http://www.sas.upenn.edu/African_Studies/Padis/telmtcs_Hall.html [1997, July 1].

HALL, TONY. 1995b. "Let's get Africa's act together...". [Online]. Available: http://www.sas.upenn.edu/African_Studies/Padis/AfTelem2_Hall.html [1997, June 24].

HALL, TONY. 1995c. "Strong words about using telematics for development". [Online]. Available: http://www.sas.upenn.edu/African_Studies/Padis/Home_Hall3.html [1997, July 1].

HARMSE, C. J.A. BOON & J.J. BRITZ. 1996. Interaction between the information sector and the rest of the economy of South Africa. In: South African journal of library and information science. 64(1):1-7.

HAWKINS, TONY. 2000. IMF chief says negative trends in Africa have been reversed. In: Cape Times Business Report. January 27.

Heading south: Basotho's only option. 1994. In: Democracy in action. 8(4):7.

Health, information society and developing countries. 1995. [ed. Marcelo C. Sosa-Iudicissa et al]. [Online]. Available: <http://www.ispo.cec.be/infosoc/health/00cover.html> [1998, August 28].

HENDERSON, JEFFREY. 1991. The globalisation of high technology production. London: Routledge.

HERBERT, ROSS. 1999a. A mad mission to the warm heart of Africa. In: Cape Argus. April 23.

HERBERT, ROSS & GREG ARDÉ. 1999b. Naidoo's tele-trek appeal to Africa's pride. In: Cape Times. March 30.

HERBERT, ROSS & GREG ARDÉ. 1999c. Naidoo seeks unity in Africa car rally. In: Cape Times Business Report. March 30.

High-tech surge causes power problems in US. 2000. In: The Sunday Independent. August 20.

HILL, ANDREW. 2000. American business feels the squeeze. In: Financial Times. March 21.

HIRSCH, JESSE. 1997b. Local knowledge - global wisdom. [Online]. Available: <http://www.tao.ca/earth/lk97/archive/0001.html> [1999, October 6].

HLOPHE, NCABA. 1999c. Globalstar SA earth station ready. In: Cape Times Business Report. February.

HOLMAN, MICHAEL & TONY HAWKINS. 2000. Africa on brink of collapse. In: Business Day. May 18.

Huge tele-industry event opens today. 1998. In: Cape Times. May 4.

INFORMATION SOCIETY AND DEVELOPMENT (ISAD). 1996. Information Society and Development conference: 13-15 May 1996, Gallagher Estate, Midrand, South Africa: theme paper. [Online]. Available: <http://infor.ic.gc.ca/ic-data/info-highway/isad/theme-e.html> [1997, April 11].

ILO (International Labour Organisation). 1998a. ILO African employment report 1995. [Online]. Available: <http://www.ilo.org/public/english/250addis/papers/1997/aer/chl.htm> [1999, October 11].

ILO (International Labour Organisation). 1998b. Child labour risks growing in Africa. [Online]. Available: <http://www.ilo.org/public/english/235press/pr/1998/4.htm> [1999,

October 11].

IMF (International Monetary Fund). 1999. IMF warns of US slowdown. In: Cape Times Business Report. 1999, November 23.

IMF (International Monetary Fund). 1999. World economic outlook. [Online]. Available: <http://www.imf.org> [1999, December 15].

INKTOMI. 2000. Web surpasses one billion documents. [Online]. Available: <http://www.inktomi.com/new/press/billion.html> [2000, February 25].

International partner is not content to be a 'me too' operator. In: Cape Times Business Report. October 14, 1999.

ISC (Internet Software Consortium). 2000. Internet software consortium. [Online]. Available: <http://www.isc.org> [2000, July 5].

ISPA (Internet Service Providers Association). 1999. Media Africa reports massive growth in SA Internet market. [Online]. Available: <http://www.ispa.org.za/press19.html> [1999, April 20].

ITU/BDT (International Telecommunication Union/Telecommunication Development Bureau). 1996. African Regional Development Conference (AF-RTDC-96). [Online]. Available: <http://www.bellanet.org/partners/aisi/confr/abidjan.htm> [1999, May 15].

ITU (International Telecommunication Union). 1998. World Development Report 1998: Universal access executive summary. [Online]. Available: http://www.itu.int/ti/publications/WTDR_98/indx.htm [1999, January 6].

ITU (International Telecommunication Union). 1998b. Progress report to World Telecom Development Conference. [Online]. Available: http://www.itu.int/ITU-D-UniversalAccess/progress_report.htm [1999, January 6].

JACOBSON, CELEAN. 2000. Mbeki enlists technology giants to hlp bridge Africa's digital divide. In: Sunday Times. July 2.

JENSEN, MIKE. 1999a. African Internet status. [Online]. Available: <http://www3.sn.apc.org/africa/afstat.htm> [1999, August 31].

JENSEN, MIKE. 1999b. African Internet connectivity. [Online]. Available: <http://www3.sn.apc.org/africa/afrmain.htm> [1999, August 31].

JENSEN, MIKE. 1999c. ICT infrastructure in Africa. [Online]. Available: <http://www3.sn.apc.org/africa/infra.htm> [1999, August 28].

JENSEN, MIKE. 1999d. Status of African information infrastructure. [Online]. Available: <http://www.un.org/Depts/eca/adf/codipap1.htm> [2000, January 15].

- JOINT VENTURE. 2000. Index of Silicon Valley. [Online]. Available: <http://www.jointventure.org/news/press/indexpr.html> [2000, April 25].
- JONES, JIM. 2000. Davos confronts the globalisation challenge. In: Business Day. January 31.
- JONES, SHIRLEY. 1999. Corruption key to ending poverty, says World Bank. In: Cape Times Business Report. October 12.
- JOUBERT, MICHELLE. 2000. New status symbol ring the retail tills. In: Financial Mail. 156(11).
- JUDGE, PAUL. 2000. A lesson in computer literacy from India's poorest kids. Businessweek.com March 2, 2000. [Online] Available: <http://businessweek.com/search.htm> [2000, April 20].
- JURICH, SONIA. 2000. The information revolution and the digital divide. In: Techknowlogia. [Online]. Available: <http://www.techknowlogia.org> [2000, March 9].
- KALETSKY, ANATOLE. 1998. Euphoric Wall St ignores the 'bubble' nature of Internet stocks. In: Sunday Independent Business. July 26.
- KALETSKY, ANATOLE. 1999. Technology - the new gold of Wall Street. In: Sunday Independent Business Report on Sunday. January 24.
- KALETSKY, ANATOLE. 2000. Wall Street will ride out the storm, even if tech stocks fail. In: Cape Times Business Report. February 18, 2000.
- KAHN, ROBERT et al. 1997. The evolution of the Internet as a global information system. In: International information and library review. 29:129-151.
- KARON, TONY. 1999. Bill and the gates of heaven. In: Cape Times. September 6.
- KARON, TONY. 2000. US economy needs tech-savvy India. In: Cape Times. March 20.
- KELLY, TIM. 1997. What does the Internet mean for development. In: Telecom Development Symposium 'Developing countries and the information society' Executive Summary. Geneva: ITU. 12-17.
- KELLY, TIM. 1997a. Pricing the Internet to avoid the World Wide Wait. Telecom Inter@ctive 97. [CD-ROM]. Available: Geneva: ITU.
- KELLY, TIM & BEN PATRAZZINI. 1997. What does the Internet mean for development? Telecom Inter@ctive 97. [CD-ROM]. Available: Geneva: ITU.
- KENNARD, WILLIAM K. 1999. Remarks of William E. Kennard Chairman, Federal

Communications Commission at the AFCOM '99 Conference Arlington, VA. June 2, 1999. [Online].
Available:<http://www.fec.gov> [1999, July 13].

KERF, MICHEL & WARRICK SMITH. 1996. Privatizing Africa's Infrastructure: promise and challenge. Washington: World Bank.

KERRY, RUTH. 1996. Government on-line project. [Online]. Available:
<http://wn.apc.org/ecis/kerry.htm> [1998, March 19].

KINCHELOE, JOE L. & PETER L. MCLAREN. 1998. Rethinking critical theory and qualitative research. In: The landscape of qualitative research: theories and issues. California: Sage. 260-299.

KLEIN, MARCIA. 2000. Blue sky dreams; pie in the sky prices. In: Business Day. January 25.

KNIGHT, PETER T. 1995. The telematics revolution in Africa and the World Bank group. [Online]. Available: http://www.knight-moore.com/html/telematics_in_africa.html [1999, November 11].

KNIGHT, PETER T. 1996. Destined to leapfrog: why a revolution in learning will occur in Brazil, Russia and South Africa. [Paper prepared for the Second International Conference on Distance Education in Russia, 2-5 July 1996, Moscow]. [Online]. Available:
<http://www.worldbank.org/html/emc/documents/leapfrog.html> [1997, April 11].

Knowledge drives economies. 1999. In: Sunday Times Business Times. October 17.

KROLL, THOMAS E. Computers and information systems. 1998. In: Britannica book of the year. Chicago: Encyclopaedia Britannica. 151-159.

KUBEYINJE, KINGSLEY. 1999. Nigeria orders parastatal to cut phone installation fees. In: Business Day. August 27.

KUDLOW, LAWRENCE. 1998. Technology heralds 'new' thought. In: Saturday Argus Personal Finance. January 1, 1998.

KUMAR, KRISHAN. 1996. From post-industrial to post-modern society. Oxford: Blackwell.

KUTTNER, ROBERT. 1999. Never mind the sex - it's the economy, stupid. In: Mail & Guardian. 15(3).

LAING, ROBERT. 2000. M-commerce relies on more WAP connection. In: Cape Times ITechnology. April 11.

LANE, ROBERT E. 1996. The decline of politics and ideology in a knowledgeable society.

In: American sociological review. 31(5):649-662.

LANKESTER, CHUCK & RICHARD LABELLE. 1997. The Sustainable Development Networking Programme (SDNP): 1992-19997. [Online]. Available: <http://www3.undp.org/papers/inet97p.html> [1998, July 4].

Latest global & regional cellular statistics. 1999. [Online]. Available: http://www.cellular.co.za/statistics_latest.htm [2000, January 11].

LATHAM & WATKINS. 1997. The Lesotho Telecommunications Act 1997. [Unpublished draft].

LAULLON, TXEMA. 1997. Internet: a tool for democracy. In: Telecom Inter@ctive 97. [CD-ROM]. Available: Geneva:ITU.

LAW, CARL EDGAR. 1997. African Telecoms Markets. London: FT Media & Telecoms.

LAW, CARL EDGAR. 1999. A year for tiger telecoms. In: African Review. April:28.

LCCI (Lesotho Chamber of Commerce), Association of Lesotho Employers (ALE) & Sechaba Consultants. 1998. Lesotho 1998: assessment of damages to business and loss of employment: a joint assessment of 1,045 businesses in Maseru and district towns. Maseru: LCCI.

Leaders urged to ease debt. 2000. In: Business Day. July 20.

LE BLANC, JAMAL. 1999. Resolving the digital divide. In: The Digital Beat. [Online]. Available: <http://www.benton.org/DigitalBeat/db111299.html> [April 25, 2000].

Lesotho 1996 official yearbook. 1996. Maseru: Ministry of Information and Broadcasting.

Lesotho. 1998. In: Africa Research Bulletin. 35(4). 13095-13096.

Lesotho to improve electricity supply countrywide. 1997. In: Ka Metsing. 6(56):5-8.

LEWIS, CHARLEY. 1997, May 30. Information society and emerging economies. Global Knowledge '97 Discussion. [Online]. Available: <http://www.globalknowledge.org:199...larchives/gkd/gk97-may97/0243.html> [1999, September 11].

LHWP (Lesotho Highlands Water Project) (Approval) Phase 1B Scheme Notice, 1992: Legal notice no.258 of 1992. In: Lesotho government gazette extraordinary. XXXVII(127):1533-1538.

LIC (Library and Information Commission). 1997. New Library: The People's Network: Libraries: key to UK's success in the information age. [Online]. Available: <http://www.ukoln.ac.uk/services/library/press-releases/lic-15oct97.html> [2000, August

- LIC (Library and Information Commission). 1997b. Libraries: the essence of inclusion. [Online]. Available: <http://www.lic.gov.uk/publications/policyreports/inclusion.html> [2000, August 10].
- LTC (Lesotho telecommunications corporation). 1998? Operational Plan.
- LYNN, MATTHEW. 2000a. Europe, US.com's poor digital cousin. In: The Sunday Independent Business Report. February 6.
- LYNN, MATTHEW. 2000b. New economy dredges up some old tricks. In: The Sunday Independent Business Report. April 16.
- LYON, DAVID. 1995. The roots of the information idea. In: Information technology and society: a reader. edited by Nick Heap et al. London: Sage. 54-73.
- MACFARLANE, DAVID & GLENDA DANIELS. 2000. Urbanisation's the global trend. In: Mail & Guardian. 16(28):34.
- MACHLUP, FRITZ. 1987. Knowledge production and occupational structure. In Evolution of an information society. ed. A.E. Cawkell. London: Aslib. 31-45.
- MADAVO, CALLISTO. 2000. World Bank study defines obstacles to the renaissance. In: Cape Times Business Report. June 8.
- MAKGOTHO, SELBY. 1999. Technophobia keeps Northern Province from 'magic'. In: The Sunday Independent Reconstruct. April 25.
- MALALA, JUSTICE. 2000. Mbeki wins firm Nordic backing. In: Sunday Times [Online]. Available: <http://www.suntimes.co.za> [2000, July 4].
- MANDELA, NELSON. 1998. Speech by president Nelson Mandela at the opening of Africa Telecom 98. [Online]. Available: <http://www.telecom98.co.za/mandela-telecom98.html> [1998, 8 May].
- MANDELA, NELSON. 1999. Nelson Mandela: the symbol of a nation. [CD-ROM]. South Africa: Q Data Consulting [1999, October 19].
- MARAIS, HEIN. 1999. What they didn't talk about at Davos. In: Mail & Guardian. 15(5):29.
- MARAIS, HEIN. 2000. 'Sidelined Africa has the slimmest chance of joining the information era'. In: The Sunday Independent. July 16.
- MARTIN, HANS-PETER & HARALD SCHUMANN. 1997. The global trap: globalization and the assault on prosperity and democracy. London: Zed.

- MATTES, R. ET AL. 1999. Still waiting for the barbarians: South African attitudes to immigrants & immigration. Southern African Migration Project: Migration Policy Series No. 14. Cape Town: Institute for Democracy in South Africa (IDASA).
- MBEKI, THABO. 1995. Speech of the deputy president of the Republic of South Africa, Thabo Mbeki, at the G-7 conference on the Information Society. [Online]. Available: <http://www.ispo.cec.be/97/press/thabo.html> [No access date].
- MBEKI, THABO. 1996. The information society and the developing world: a South African approach May 1996: Republic of South Africa: letter from deputy state president Thabo Mbeki. [Online]. Available: <http://www.csir.co.za/isad/letter.htm> [1997, June 24].
- MBEKI, THABO. 1998. Statement of deputy president Thabo Mbeki at the Africa Telecom '98 forum: Johannesburg, May 4, 1998. [Online]. Available: <http://www.telecom98.co.za/thabo-telecom98.html> [1998, May 8].
- Mbeki lauds African regional integration. 1999. In: Business Day. August 18.
- MCDONALD, DAVID. 1998. Challenging xenophobia: myths and realities about cross-border migration in South Africa. Southern African Migration Project: Migration Policy Series No. 7. Cape Town: Institute for a Democratic Alternative for South Africa.
- MCMURCHY, DALE AND JOHN GAY. 1995. Poverty and health in Lesotho: a look at present trends: a study prepared for the European Union and the World Health Organization.
- MEDIA AFRICA. 1999. The 1998 South African web user survey. [Online]. Available: <http://www.mediaafrica.co.za/webusers.html> [1999, August 2].
- MILLER, JONATHAN. 1996. The Information Society and Development Conference: Gallagher Estate, Midrand, South Africa, May 13-15, 1996: summary report. 1996. [Online]. Available: <http://www.wn.apc.org/nitf/isadrptf.htm> [1998, 30 April].
- MOLAPO, PEETE. 1998. Enhancing private sector involvement in SADC with emphasis on the SADC trade protocol. In: Lesotho Chamber of Commerce and Industry (LCCI) 22nd Annual General Meeting 5-7 April 1998. 6-12.
- MOTHIBELI, TEFO. 1999. Lesotho privatisation drive to boost economy. In: Sunday Independent Business Report. September 5.
- MOTSETA, SELLO. 2000. Lesotho embraces privatisation. In: Business Day. August 29.
- MULLER, JOE. 2000. Personal e-mail. [2000, August 30].

- MUSTAFA, MOHAMMAD A., BRUCE LAIDLAW & MARK BRAND. 1997. Telecommunications policies for Sub-Saharan Africa. Washington: World Bank.
- NAIDOO, JAY. 1998. Preparing for Africa Telecom 98 conference & exhibition: African renaissance - a spectrum of opportunity. [Online]. Available: <http://www.telecom98.co.za/speeches/sp980205.html> [1998, April 21].
- NAIDOO, JAY. 1999a. African Connection. [Online] Available: <http://www.africanconnection.org> [1999, April 26].
- NAIDOO, JAY. 1999b. Challenges of information technology - SADC Consultative Conference, February 1999. [Online]. Available: <http://www.africanconnection.org/docs/speeches/sp0212.htm> [1999, April 26].
- NAKAMOTO, MICHIO. 2000. Glitches cast doubt over mobile net. In: Financial Times. August 12/13, 2000.
- NATIONAL TELECOMMUNICATIONS & INFORMATION ADMINISTRATION (NTIA). 1999. Falling through the Net: defining the digital divide. [Online]. Available: <http://www.ntia.doc.gov/ntiahome/ftn99> [1999 November 11].
- Nigeria plans break-up of state-run telecoms firm. In: Cape Times Business Report. February 2, 2000.
- NII (National Information Infrastructure). 1997? What is the NII? [Online]. Available: <http://nii.nist.gov/nii/whatnii.html> [2000, May 9].
- NITF (National Information Technology Forum). 1996a. After ISAD: reviewing the ISAD conference: towards the information community in South Africa. [Online] Available: <http://wn.apc.org/nitf/isaddebr.htm> [1998, 2 May].
- Not just toys for the elite - cell networks patch together talk throughout Africa. In: Cape Times. January 11, 2000.
- NUA. 1999. NUA Internet surveys. [Online]. Available: <http://www.nua.ie/surveys> [1999, September 11].
- NUA. 2000. Cyveillance: number of pages online tops 2.1 billion. [Online]. Available: <http://www.nua.ie/surveys> [2000, July 13].
- O'CONNOR. 1998. Consolidation and deregulation: the year in telecoms. In: FT.com Financial Times. [Online]. Available: <http://www.ft.com/1998/q2616.htm> [1999, January 15].
- OECD (Organisation of Economic Cooperation and Development). 1999a. OECD science, technology and industry scoreboard 1999: benchmarking knowledge-base economies. [Online]. Available: <http://www.oecd.org> [1999, October 29].

- Okinawa Charter on global information society. 2000. [Online]. Available:
<http://www.library.utoronto.ca/g7/summit/2000okinawa/gis.htm> [2000, August 22].
- One World. 1998. In: Economist. [Online]. Available:
<http://www.economist.com/editorial/freeforall/18-1-98/sb0225.html> [1998, October 10].
- Opening markets to private competition boosts growth. 2000. In: Business Day. June 28.
- PANOS. 1997. Telecommunications: development and the market: the promises and the problems. In: Panos media briefing. 23. [Online]. Available:
<http://www.oneworld.org/panos/briefing/telecoms.htm> [1999, April 12].
- PANOS. 1998b. Panos Briefing No. 28 The Internet and poverty. [Online]. Available:
<http://www.oneworld.org/panos/briefing/interpov.htm> [1998, October 1].
- PARKER, EDWIN B. 1987. Information and society. In Evolution of an information society. edited by A.E. Cawkell. London: Aslib. 46-59.
- PATEL, ASHRAF. 2000. 'Seattle battle' hit cyberspace as well as streets. In: The Sunday Independent Reconstruct. January 9.
- Patently, it just doesn't work. 2000. In: Cape Times Business Report. March 23.
- PATTON, MICHAEL QUINN. 1990. Qualitative evaluation and research methods. California: Sage.
- PETRAZZINI, BEN & TIM KELLY. 1998. Globalisation and its effects on developing countries. In: BMI TechKnowledge communication technologies handbook 1998. Johannesburg: BMI-T Group. 29-35.
- PHAMOTSE, LETSELA. 1996. Preparing for the information technology challenge of the 21st century. [Online]. Available:
http://www.unesco.org/webworld/iip/iip_newsletter/iipnw006.htm [1999, October 5].
- Phone access scarce in Africa's rural areas. 2000. In: Business Day. June 28.
- Phones sans frontiers? 1997. In: The geographical magazine. May 1997. 34-36.
- PICTA (Partnership for Information and Communication Technologies in Africa). 1997. Final report of the meeting of partnership for information and communication technologies in Africa (PICTA). [Online]. Available:
<http://resources.bellanet.org/gkai...ms/cfpicta/incoming/1097final.html> [1998, August 1].
- PICTA (Partnership for Information and Communication Technologies in Africa). 1999.

Partnership for information and communication technologies in Africa (PICTA). [Online]. Available: <http://www.bellanet.org/partners/picta> [1999, October 30].

PORAT, MARC URI. 1977. The information economy. Washington: United States Department of Commerce.

PRICE, CHRISTOPHER & PAUL TAYLOR. Future looks sleek and pocket-sized. In: Business Day. March 26, 1999.

Puncturing the great information age myth. 1999. In: Sunday Times Business Times. October 31.

RABINOVITZ, JONATHAN. 2000. Valley of the digital divide. In: The Standard. [Online]. Available: <http://www.thestandard.net> [2000, April 25].

RANTAO, JOVIAL. 1999. Naidoo in 'technology trek' through Africa. In Cape Times. March 9.

Ravaged economy under intense siege. 2000. In: The Financial Gazette. June 15-21.

RICHARDSON, DON. 2000. Rural access: how can connectivity contribute to social and agricultural development? [Online]. Available: http://www.technologia.org/TKL_a...umber+4&FileType=HTML&ArticleID=89 [2000, March 8].

ROBERTSON, DON. 1999. Adding some optic fibre to African Renaissance. In: Sunday Times Business Times. October 10.

Rosy prospects, forgotten dangers. 2000. In: Sunday Times Business Times. April 16.

RUDDLE, KEITH. 1998? From downsizing to revitalisation. In: Business Day: mastering global business.

RUGGIERO, RENATO. 1997. Singapore: opening a new chapter. In: Focus: World Trade Organization: newsletter. 15:6.

SADC (Southern African Development Community). 1998. Theme document: SADC in the next millennium. [Online]. Available: <http://www.sadc.int/theme.htm> [1999, 5 March].

SARDC (Southern African Research and Documentation Centre). 1999. News feature. [Online]. Available: e-mail: sardc@sardc.net [1999, February 8].

SATCC (Southern African Transport and Communications Commission). 1998. Proposed telecommunications policies for SADC and model telecommunications bill.

SAYAGUES, MERCEDES. 1999. "I have only known war... and my children are growing up

in war". In: Mail & Guardian. 15(8).

Schooling for all can save Africa from a bleak future. 1999. In: Sunday Times Business Times. March 28.

SECHABA CONSULTANTS. 1997. Riding the tiger: Lesotho miners and permanent residence in South Africa. Southern African Migration Project: Migration Policy Series No. 2. Cape Town: Institute for a Democratic South Africa (IDASA).

SHILLINGFORD, JOIA. 2000. Ready to take off more rapidly than the internet. In: Financial Times Survey FT Telecoms March 15.

SHUTT, HARRY. 1998. The trouble with capitalism: an enquiry into the causes of global economic failure. London: Zed.

SINCLAIR, ROGER. 2000. The new economy is now the only economy. In: Business Day. April 25.

SILVERMAN, DAVID. 1995. Interpreting qualitative data: methods for analysing talk, text and interaction. London: Sage.

SIMMONDS, ROBERT. 1999. Call-more has become a call for more. In: The Sunday Independent Reconstruct. October 31.

Six of top 10 highest-paid CEOs head computer firms. 2000. In: Business Day. May 2.

SLAUGHTER, MATTHEW J. & PHILLIP SWAGEL. 1999. Does globalization lower wages and export jobs? [Online]. Available:
<http://www.imf.org/external/pubs/ft/issues11/index.htm> [1999, May 21].

SMITH, MICHAEL. 2000. Warning over IT skills gap. In: Financial Times. March 7.

SMITH, TED. 1999?. The dark side of high tech development. [Online]. Available:
<http://www.igc.org/trac/geature/hitech/overview.html> [1999, June 15].

Soon we'll be tapping into the Net. 2000. In: Sunday Times Business Times. April 30.

Soros challenges G7. 1999. [Online]. Available:
http://cnfn.com/1999/01/29/europe/davos_soros [2000, August 18].

SOUTHALL, ROGER. 1998. Is Lesotho South Africa's tenth province? In: Indicator. 15(4):83-89.

South Africa fast tracks rural telephony rollout. 1999. In: Communications Africa. February/March:42.

Statistics of cellular in South Africa. 1999. [Online]. Available:

http://www.cellular.co.za/statistics_south_africa.htm [2000, January 10].

STEHR, NICO. 1992a. Experts, counsellors and advisers. In: The culture and power of knowledge. edited by Nico Stehr & Richard V. Ericson. Berlin: Walter de Gruyter. 107-155.

STEVENSON, REED. 2000. Internet will change Japan's economy. In: Business Day. April 12, 2000.

STIGLITZ, JOSEPH. 1998. Creating competition in telecommunications. Conference on managing the telecommunications sector post-privatization. George Washington University, Washington DC. [Online]. Available: <http://www.worldbank.org/html/extdr/extme/jssp042798.htm> [1998, June 19].

STONES, LESLEY. 1998. All-African satellite consortium to be named next month. In: Business Day. November 26.

STONES, LESLEY. 1999. A brilliant idea whose time may have come and gone. In: Business Day. September 7.

STONES, LESLEY. 1999c. Cellphone radiation could be a real danger. In: Business Day. June 17.

STONES, LESLEY. 2000. Wap captures the imagination. In: Business Day. March 9, 2000.

STONES, LESLEY. 2000a. "There is more to come from the net". In: Business Day. May 11, 2000.

STRUTHERS, MARGARET ALYNN. 1999. Personal photographs.

Sub-Saharan Africa may be 'left on sidelines'. 1999. In: Cape Times Business Report. November 22.

TAGISH. 1995. Telematics. [Online]. Available: <http://domino.tag.co.uk/techterm.nsf/all/TELEMATICS> [1999, October 6].

TAGISH. 1996. The Information Society - meeting the social and economic challenge. [Online]. Available: <http://www.tagish.co.uk/tagish/pubs/is1/society2.htm#INTRODUCTION> [1998, February 12].

TALERO, EDUARDO & PHILIP GAUDETTE. 1996. Harnessing information for development: a proposal for a world bank group strategy. [Online]. Available: <http://www.worldbank.org/html/fpd.harnessing> [1998, March 24].

TARJANNE, PEKKA. 1998. Only Africans can open the lock. In: BMI TechKnowledge communication technologies handbook 1998. Johannesburg: BMI-T Group. 15-20.

- TAYLOR, PAUL. Phones become upwardly mobile. 1999. In: Financial Times Weekend. October 16/17.
- Technology changes face of US economy. 1999. In: Business Day. November 8.
- Technology and science. 2000. [Online]. Available: <http://www.algore2000.com> [2000, May 5].
- Telecoms for Africa. 1999. In: Business Day. June 14.
- Telematics symposium: recommendations. [Online]. available: http://www.sas.upenn.edu/African_Studies/Padis/telmatics_Recomm.html [2000, June 28].
- THABANE, MATLATSI. 1994. Vandalism, and uneven development; lessons from the experiences of the Lesotho Electricity Corporation and the Lesotho Telecommunications Corporation. In: Journal of Research. 4. 59-81.
- THUROW, LESTER C. 1996. The future of capitalism. New York: Penguin.
- TOGNA, MARTINA DELLA. 1999. NGOs see Internet as a vital tool. In: The Sunday Independent Reconstruct. October 31.
- Too hot to handle. 2000. In: Financial Times. January 8/9.
- TORRES, LIV. 1998. Labour markets in Southern Africa. Norway: Fafo Institute for Applied Social Science.
- TWIST, KADE. 2000?. Four directions to making an Internet Indian. Available: <http://www.digitaldividenetwork.org> [2000, May 5].
- UNCTAD (United Nations Conference on Trade and Development). 1999. Trade and development report, 1998. [Online] Available: <http://www.unctad.org/en/docs/tdr99> [1999, November 11].
- UNDP (United Nations Development Programme). 1996. Development co-operation Lesotho 1996 report.
- UNDP (United Nations Development Programme). 1997. Attn all: please find below recommendations from participants in the UNDP/ECA East Africa seminar on the Internet, held from 13-15 October 1997. [Online] Available: <http://www.un.org/Depts/eca/news/press/press30.htm> [1998, 7 May].
- UNDP (United Nations Development Programme). 1997b. Human development report. New York: Oxford University Press.

- UNDP (United Nations Development Programme). 1997d. Status of Internet connectivity in Sub-Saharan Africa. New York.
- UNDP (United Nations Development Programme). 1998. Human development report: Lesotho. Maseru: UNDP.
- UNDP (United Nations Development Programme). 1998a. Human development report 1998. [Online]. Available: <http://www.undp.org/undp/hdro/e98over.htm> [1998, October 2].
- UNDP (United Nations Development Programme). 1999. Human development report. New York: Oxford University Press.
- UNDP (United Nations Development Programme). 1999a. The facts of global life. [Online]. Available: <http://www.undp.org/hdro/E5.html> [1999, October 10].
- UNDP (United Nations Development Programme). 1999b. Reducing the gap between the knows and the know-nots. Online. Available: <http://www.undp.org/hdro/E3.html> [2000, October 12].
- UNESCO (United Nations Educational, Scientific, and Cultural Organization). 1996. UNESCO workshop on Sensitization on Computers in Education. [Online]. Available: http://www.unesco.org/webworld/iip/iip_newsletter/ipnwoo5.htm [1999, May 10].
- UNICEF (United Nations Children's Fund). 1999. The state of the world's children: education. [Online]. Available: <http://www.unicef.org/sowc99/facts.htm> [1999, May 8].
- USA (Universal Service Agency). 1998a. Discussion paper on definition of universal access and universal service in telecommunications in South Africa. [Online]. Available: <http://www.usa.org.za/documents/discuss1.htm#sum> [1999, May 14].
- USA (Universal Service Agency). 1998b. Universal Service Agency telecentre project. [Online]. Available: <http://www.usa.org.za/projects/tele.htm> [1999, May 14].
- Unlocking the vast potential of Africa. 2000. In: Sunday Times Business Report. April 30.
- US battles to fill IT job vacancies. 2000. In: Cape Argus. April 12.
- US economic expansion is 'pivotal event'. In: Cape Times Business Report. March 23, 2000.
- VASUKI, S.N. The lions are coming: will Africa become the next economic miracle? [Online]. Available: http://www.weforum.org/activities/...ar_report/the_lions_are_coming.asp [1999, February 19].
- WACKERNAGEL, MADELEINE. 2000. Cyberpower illuminates the gap between the haves and have-nots. In: Cape Times Business Report. February 2.
- WALKER, JULIE. 1999. M-Cell's vision goes beyond cellphones. In: Sunday Times Business

Times. November 28.

WALLIS, WILLIAM. 2000. A nation left behind to play catch-up. In: Financial Times. March 30.

WARNER, EDWARD S. 1993. Building a superhighway for data. In: Britannica book of the year. Chicago: Britannica Encyclopaedia.

WASSWA, HENRY. 1999. Ugandans revel in new cellular and home telephones. In: Cape Times Business Report. July 20.

WEAVER, TONY. 1998. The elephant man. In: Outlook. October. 85-87.

WEBBER, JUDE. "Embrace the web or slip 50 years in 5 years". 2000. In: Cape Times Business Report. April 12.

WHEATLEY, ALAN. 1999. NGOs plan show of strength at WTO meeting. In: Cape Times Business Report. October 13.

WHITE, DERMOTT. 2000. Unequal balance of wealth in SA persists. In: Sunday Times Business Times. July 11.

WILD, KATE & CLAIRE SIBTHORPE. 1999. From ISAD to the African Development Forum: the expansion of interest in ICTs in Africa from 1996 to 1999. [Online]. Available: <http://www.un.org/Depts/eca/adf/kate.htm> [1999, November 1].

WILSON, ERNEST J. 1997. Keynote address: The global information revolution and Africa: exploring the relationship between the NII and trade and investment. In: Building the African information society with public and private sector cooperation. Pretoria (SA): CSIR.

WOLFENSOHN, JAMES D. 1999. Coalitions for change: address to the Board of Governors. [Online]. Available: <http://www.worldbank.org/html/extdr/am99/jdwsp/jdwsp-en.htm> [1999, October 15].

WOLFENSOHN, JAMES. 2000. Blaming globalisation does not help. In: Business Day. April 12.

WORLD BANK. HUMAN RESOURCES DIVISION SOUTHERN AFRICA
DEPARTMENT AFRICA REGIONAL OFFICE. 1995. Lesotho poverty assessment. New York: World Bank.

WORLD BANK. 1995b. The Information for Development Program. [Online]. Available: <http://www.infodev.org> [1999, May 7].

WORLD BANK. 1996. Taking action to reduce poverty in sub-Saharan Africa: an overview. [Online]. Available: <http://www.worldbank.org/afr/poverty/brochure/poverty.htm>

[1999, October 11].

WORLD BANK. 1998?. A forum to promote Internet connectivity in Africa. [Online]. Available: <http://www.worldbank.org/aftdr/connect/default.htm> [1999, June 10]

WORLD BANK. 1999. Social capital and information technology. [Online]. Available: <http://www.worldbank.org/poverty/scapital/topic/info1.htm> [2000, February 12].

World of learning. 2000. Europa: London

The WTO information technology agreement. 1997. In: Focus: World Trade Organization newsletter. 1997. 15:16.

ZAAIMAN, R.B. 1985. The information society in South Africa - an exploratory study. In: South African journal of library and information science. 60(2):129-138.

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